January 1989 £1.25

AMSTRAD Computer User

WITH CPC COMPUTING



OPERATION WOLF NEEDS YOU!

WIN

– a unique Chess set

WIN

– the BrunWord Teddy

WIN

– £200 worth of sports equipment

JOYSTICKS
Speed King v Delta

HARDWARE
Turn on to teletext

PLUS
New games pages and much more . . .

The official magazine for all users of the Amstrad CPC series

Norway NOK 20.00 Denmark Kr. 33.50 New Zealand NZ$4.95 Rec.

AMSTRAD Computer User

The official magazine for Amstrad CPC users

CONTENTS

January 1989

Welcome to all our new readers.

CPC COMPUTING

This month one of the longest-established Amstrad magazines, *CPC Computing*, merges with *ACU* – which makes us by far the biggest, brightest and best CPC magazine of them all. We welcome many thousands of new readers and hope that within these pages you and your CPC will find much to inform and entertain you – both now and for a long time to come.

Collect your Gift Voucher on Page 69

REGULARS

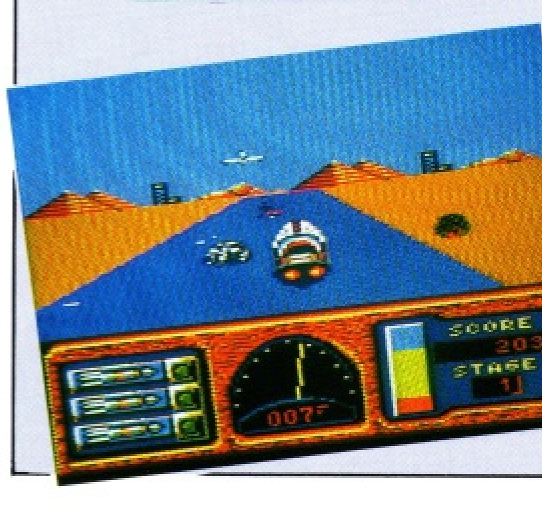
COVER STORY

WIN WIN WIN

PROGRAMMING

FEATURES

WHICH GAME?



The curtain goes up on our brand new redesigned games pages. Domark's Live and Let Die wins the first Gold Star Game award.

STAR ACU GAME

Editorial and Advertising offices:
169 King's Road, Brentwood,
Essex CM14 4EF.
Tel: 0277-234459 (Editorial);
0277 234434 (Advertising)
Telecom Gold: 72:MAG021
63,599 Jan-June 1987

Published by Avralite Ltd, Adlington Park, Adlington, Macclesfield SK10 4NP.

News trade distribution: Diamond-Europress Sales & Distribution Ltd, Unit 1, Burgess Road, Ivyhouse lane, Hastings, East Sussex TN35 4NR.
Tel: 0424 430422.

Editor: Simon Rockman
Assistant Editor: Jeff Walker
Editorial Assistants: Elaine Rawlins, Vicky Spooner
Advertisement Manager: Jane Wadham
Advertising Sales: Sharon Green
Clare Baxter
Production: Tanya Al-Rais

Cover photography by Martyn Howett
Commando outfit supplied by Counterattack

AMSTRAD *Computer User*

FAMILY PACK OFFER

SAVE OVER £16

Here's a great idea for Christmas! We are offering both Mini Office II and ALL the Fun School I tapes or discs at a substantially reduced price. For just £19.95 on tape, or £29.95 on disc, this is an offer you should not miss!

TAPE RRP £32.80
OFFER PRICE **£19.95**

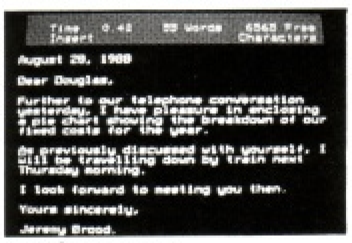
DISC RRP £46.80
OFFER PRICE **£29.95**

Mini Office II

Mini Office II is the highly-acclaimed, award-winning suite of integrated programs which will turn your computer into a versatile business machine.

Look at some of the tasks you can perform with the six separate modules:

BBC version

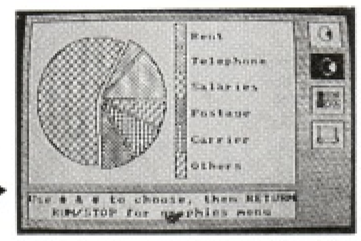


Word processor

Compose a letter with the WORD PROCESSOR. Set the printout options using embedded commands or menus and use the mail merge facility to produce personalised circulars.

With the GRAPHICS module you can produce pie charts, overlay line graphs and display bar charts side by side or stacked. Enter data directly or load from the spreadsheet.

C64 version



Graphics

C64 version



Database

Build a versatile card index with the DATABASE. Use the flexible printout routine, do powerful multi-field sorts, use all arithmetic functions and link with the word processor.

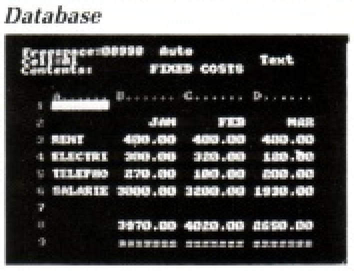
Design the layout of a label with the easy-to-use LABEL PRINTER. Select label size and sheet format, read in database files and print out in any quantity.

Amstrad version



Label printer

Amstrad version

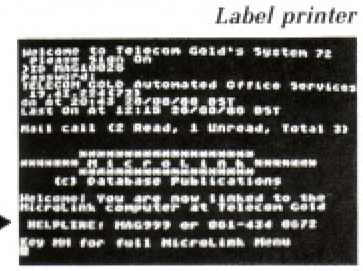


Spreadsheet

Prepare budgets and tables with the SPREADSHEET module. Total columns and rows with ease, copy formulae absolutely or relatively, and recalculate automatically.

Use a modem with the COMMS module to access services such as MicroLink and order a wide range of goods, and send instant electronic mail, fax, telex and telemessages.

Atari version



Communications

FUN SCHOOL!

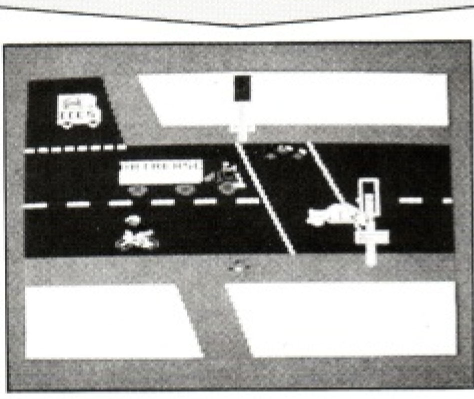
- **Use your Amstrad CPC to teach and amuse your children at the same time**
- **Three packages crammed full of educational programs – and so easy to use!**
- **Each program has been educationally approved after extensive testing in the classroom**

Learning can be fun

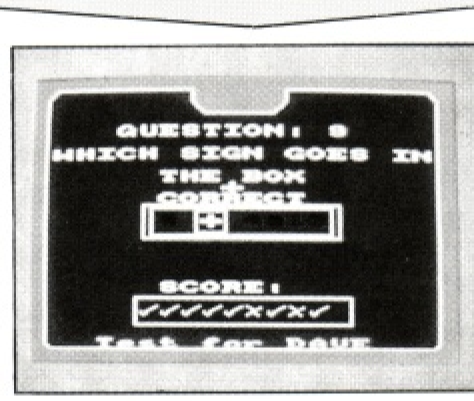
Ages 2-5	
Alphabet	**Magic Garden**
Colours	**Matchmaker**
Counting	**Pelican**
House	**Seaside**
Numbers	**Snap**

Ages 5-8	
Balance	**Fred's Words**
Castle	**Maths Test**
Derrick	**Number Signs**
Hilo	**Seawall**
Mouser	**Super Spell**

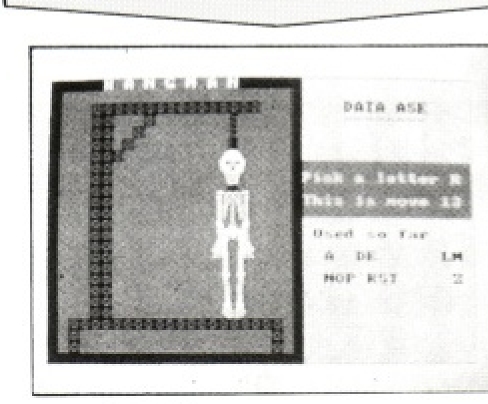
Ages 8-12	
Nim	**Odd Man Out**
Guessing	**Pelmanism**
Hangman	**Towers of Hanoi**
Maths Hike	**Codebreaker**
Anagram	**Dog Duck Corn**



PELICAN
Teach your children to cross the road safely at a Pelican crossing



NUMBER SIGNS
Provide the correct arithmetic sign and aim to score 10 out of 10



HANGMAN
Improve your child's spelling with this fun version of the popular game

TO ORDER YOUR PACK, PLEASE TURN TO THE FORM ON PAGE 73

NEWS

Computer User

CPC Computing readers start here

IF you usually read *CPC Computing,* which was formerly called *Computing with the Amstrad CPC,* you may have wondered why it has not appeared on the magazine shelves this month.

It is because *ACU* and *CPCC* have joined forces to produce a bigger, better, stronger magazine. Your favourite *CPC Computing* articles will be joining the Hairy Hacker, Auntie John and David Foster, along with more games reviews and better features.

If you subscribed to *CPC Computing* your subscription will be transferred to *ACU*, and if you already have an *ACU* subscription it will continue.

We would like to extend a warm welcome to our new readers. We hope you will like what you find.

Simon Rockman, Editor



Mr Okawara the general manager, Ian Bailey the production manager, David Ward financial controller, and Mr Otaki the managing director of Citizen Manufacturing, look at the 100,000th Citizen printer made in Britain. This one is destined for sale in Europe

Five minute wonders

CITIZEN has produced 100,000 printers in the UK since it opened its factory in Scunthorpe. Which works out at nearly 12 printers per hour, in an 8,544 hour year or roughly one printer every five minutes.

The factory now makes the entire range of Citizen printers, with a greater rate of production expected when the purpose built 7,300 sq metre factory opens this month.

When full production is reached Citizen anticipates runs of more than 30,000 units a month, with the staff swelling from 110 to around 300 and a predicted turnover of £52 million a year.

Taking stock of Protext

WHEN is a word processor a stock control program? When it is Protext. Stock Control is the latest program from Thompson Computers. It has been written, like all Thompson Computers' previous products, using the Promerge language that comes with the full CP/M Plus version of Protext.

Stock Control has been designed for the small business which wants to keep track of stock items categorised into groups, work out the value of stock held and, of course, allow you to update the details.

Because this uses the Promerge commands to write to the disc, it will not work with the Amsdos Promerge set-up.

Perhaps the best news about the package is the price. Thompson Computers Stock Control costs £16.50. For more details write to them at 8 Hyholmes, Bretton, Peterborough, PE3 8LG.

Amstrad BBS rides high

LAST month we broke the news about the new Amstrad bulletin board on 0277 231276. Since then the lines to the system have come alive.

This shows how on the ball *ACU* readers really are, from one short article in the December issue the number of people using the system has multiplied many times.

"It just goes to show the power of the press", says Brian Chappell, the system operator.

Simon Angel, Amstrad's group services controller, is reported to have said: "Knowing that every Amstrad owner can access our information and advice centre for 8,544 hours a year makes me sleep better at night".

However that quote came from an Amstrad press release, so he is more likely to have said: "I don't know... make something up".

BrunWord gets its skates on

THE latest version of the BrunWord word processor leaves its predecessor standing. Author Peter Brunning has honed the code – doubling the speed of the program.

Peter told *ACU*: "When I finished tweeking the spell checker and found it ran 40 per cent faster, I felt a real sense of achievement".

Perhaps the most noticeable improvements are the increase in colours and a remarkable 128 column mode which allows more text to be viewed. This is useable on a colour display but really comes into its own on a green screen monitor.

The speed of the screen update has been improved, "It was an afternoon's work", says Peter, who is so happy with the program that he has offered a super prize to readers of *ACU*. For more details see Page 27.

DISCOUNT SOFTWARE

from M.J.C. SUPPLIES

DISC GAMES:

ATF	11.95
Autura	11.95
Brian Clough Football	14.95
Bubble Ghost	11.95
Colossus 4 Chess	11.95
Colossus Mah-Jong	11.95
Conflicts	14.95
Driller	14.95
Empire Strikes Back	11.95
Fire & Forget	11.95
Football Director II	15.95
Football Manager II	11.95
F15 Strike Eagle	11.95
Game Over II	11.95
Game, Set and Match II	13.95
Gold, Silver, Bronze	21.95
Hotshot	11.95
Konami Arcade Collection	14.95
Lancelot	14.95
Lucas Film Collection	11.95
Magnificent Seven	14.95
Mickey Mouse	12.95
Overlander	10.95
Pirates	16.95
Platoon	11.95
Prof. Adventure Writer	22.95
Revenge of Dom	11.95
Roadblasters	11.95
Scrabble Deluxe	12.95
Silent Service	11.95
Street Fighter	11.95
Sorceror Lord	13.95
Target Renegade	11.95
Thundercats	11.95
Time and Magik	11.95
Trivial Pursuits	16.95
The Pawn 6128	16.95
Vindicator	11.95
We are the Champions	14.95

THIS MONTHS SPECIAL

SPECIAL SUPREME CHALLENGE
Including Elite, Starglider, Sentinal, Tetris, Ace II

R.R.P. £16.95
Ours £11.95

EDUCATIONAL:

Fun School 2-5 years	7.95
Fun School 5-8 years	7.95
Fun School 8-12 years	7.95
World Wise	11.95
Animal Veg. Mineral	11.95
Answer Back Jnr Quiz	11.95
Fact File Spelling	7.95
Fact File Arithmetic	7.95
Fact File Sports	7.95

Note: FACTFILES ARE EXTRA QUESTION PACKS FOR THE ANSWER BACK JNR. QUIZ

DISC SERIOUS:

Spanish Tutor	16.95
French Mistress	16.95
German Master	16.95
Italian Tutor	16.95
Maxam ass/diss	19.95
Protext	19.95
Prospell	18.95
Promerge	18.95
Stop Press	39.95
Qualitas Plus	12.95
Tasword 6128	19.50
Taspell	12.95
Tasprint	10.95
Tascopy	10.95
Tasdiary	10.95
Tassign 6128	23.95
Matrix Spreadsheet	29.95
Mastercalc 128	25.95
Masterfile III	29.95
Mini Office II	15.95
Advanced Music System	25.95
Advanced Art Studio	19.95
Arnor Filer	18.95
Arnor Office Suite	26.95

CPM BASED:

Supercalc 2	39.95
Dr Graph	39.95
Dr Draw	39.95
Dr CBasic	35.95
Dr Pascal MT+	35.95
Arnor C Compiler	38.95
Maxam II	38.95
Nevada Fortran	39.95
Nevada Cobol	39.95
Hisoft Devpac 80	39.95
Hisoft Pascal 80	39.95
Hisoft C Compiler	39.95
Iankey 2 Finger Typing	19.95
Iankey Crash Course	19.95

MJC SPECIAL

PROTEXT CPM: including Spellchecker & Mailmerge
RRP £59.95 Ours £39.95

CASSETTE BASED:

Maxam 464	15.95
Protext 464	15.95
Tasword 464	15.95
German Master 464	14.95
French Mistress 464	14.95
Answer Back Jnr Quiz	8.95
Mini Office II 464	11.95

ACCESSORIES:

Printer Lead 1M	8.95
Printer Lead 1.5M	9.95
Printer Lead 2.0M	10.95
RS232 Leads (various)	11.95
Mono Screen Filter	12.95
Colour Screen Filter	14.95
Comp Pro 5000 Joystick	13.95
Cruiser Joystick	9.95
6128 Light Pen	26.95
6128 Mon Ext Leads	7.95
1000 Fanfold Labels	5.95
3" Disc Head Cleaner	6.95
Second Drive Lead	7.95
DKT 64K Memory Exp	44.95
AMS 20L Disc Box	9.95
AMX Mouse + Art	65.95
AMX Mouse + Stop Press	69.95
464 Dust Cover (mon/col)	7.95
6128 Dust Cover	7.95
Amstrad RS232 Interface	55.95
Quick Shot Turbo Joystick	11.95
Multiface II+	42.95

BOOKS/MANUALS:

Advanced Amstrad Graphics	7.95
Mastering Machine Code	8.95
The Amstrad CPM+ Book	12.95
128 Firmware Spec (968)	18.95
Programming the Z80	19.95

RIBBONS

	1	2	5
DMP 2000/2160	3.95	7.00	15.00
Panasonic 1080/81	3.95	7.00	16.00
Citizen 120D	3.95	7.00	15.00
Star LC10	3.95	7.00	15.00
Micro P165/200	4.95	8.00	18.00

DISCS

Genuine Amsoft CF2 Discs x 5	12.00
Amsoft CF2 Discs x 10	22.95
Amsoft CF2 Discs x 20	42.95

ROM BASED:

Maxam	29.95
Protext	29.95
BCPL	22.95
Utopia	22.95
Prospell	26.95
Promerge+	26.95
Maxam 1.5	22.95
Cage Rom (state I/face)	31.95
Rodos	28.95
KDS Rom Board (holds 6)	25.95
Rombo Rom Board (holds 8)	31.00
Rombo (bought with a Rom)	28.95

M.J.C. PACKAGES

Qualitas Plus KDS 8 Bit Port
Display Font Pack
RRP £44.45
Package Price £34.95

NEW PRODUCTS:

KDS 8 BIT PRINTER PORT: Gives your printer more flexibility – ideal for use with QUALITAS.
MJC Price: £18.95

KDS RS232 INTERFACE: Including comms software built in on Rom.
MJC Price: £45.95

KDS 5.25" DISC DRIVE: For use as a second drive, complete with software & lead. Plug in and go.
MJC Price: £149.95

CORNIX SOFTWARE

SIMPLE ACCOUNTS
Easy to use small business accounts, including VAT calculations.
Cassette £34.95 Disc £39.95

CARD INDEX
Easy to use filing system
Cassette £19.95 Disc £24.95

PRODUCT COSTING
Disc £39.95

JOB ESTIMATING
Disc £39.95

Full specifications on above programs available on request

PRINTER RANGE

Star LC10 144CPS Front Panel Font Selection MJC Price: £234.95

PANASONIC 1081: 80 column, 120 CPS Friction & Tractor feed, Epson comp.
MJC Price: £169.95

MP-200 PRINTER: 80 column, very fast 240 CPS, Friction & Tractor, Epson comp.
MJC Price: £279.95

MP-201 PRINTER: wide 136 column, fast 240 CPS, Friction & /Tractor, Epson comp.
MJC Price: £349.95

DMP2160 Printer
MJC Price: £159.95

ALL PRICES INCLUDE VAT, POSTAGE & PACKING IN THE U.K.

THE ABOVE SOFTWARE IS ONLY FOR THE AMSTRAD CPC RANGE PCW OWNERS PLEASE WRITE FOR DISCOUNT PRICES

Overseas orders welcome – Please write for details

WE ARE NOW IN OUR FOURTH YEAR OF SPECIALISING IN AMSTRAD MAIL ORDER, OUR POLICY IS TO PROVIDE THE WIDEST RANGE AT DISCOUNT PRICES WITH A FAST TURN AROUND TIME – TRY OUR SERVICES WITH CONFIDENCE

CALLERS WELCOME!: MON-FRI 9am to 5pm. SAT 10am to 4pm

PLEASE SEND CHEQUES/POs TO:

M.J.C. SUPPLIES, (ACU)

40a Queen Street, Hitchin, Herts. SG4 9TS.
Tel: (0462) 32897/420847 for enquiries/Credit Card orders

VISA

WHICH GAME?

CONTENTS

GALLUP CHART

LM		
NE	1	Joe Blade 2 Players £1.99
1	2	Bomb Jack Encore £1.99
NE	3	Daley's Olympic Challenge Ocean £9.95
4	4	Kik Start 2 Mastertronic £2.99
3	5	Air Wolf Encore £1.99
NE	6	Adv Pinball Simulator Code Masters £1.99
RE	7	Ace of Aces Kixx £2.99
10	8	Yogi Bear Alternative £1.99
2	9	Gauntlet Kixx £2.99
16	10	European 5-a-side Silverbird £1.99

THREE months ago at the launch of Night Raider, Gremlin Graphics boss Ian Stewart claimed his company was taking a permanent step away from its cute-and-cuddly image.

Motor Massacre, a new Gremlin release (out now at £9.99 tape, £14.99 disc) puts you on earth after the nuclear holocaust, your aim to become wealthy and famous. In the words of the press release: "Fight your way to the demon drone and compete in the most horrifying carnival of motor destruction ever conceived".

Also out now, at the same price, is Gremlin's computerised **Roy of the Rovers**, a mixture of adventure and arcade game. As player manager of Melchester Rovers, you have to explore Melchester to find four kidnapped footballers before playing in a celebrity 5-a-side football match the next day.



Ocean's Dragon Ninja. The whole lorry is a massive sprite that scrolls impressively across the screen. Out in the New Year

Gremlin has two more CPC games on the horizon. **Technocop**, a road sequence simulation with a plot like Mad Max, will be out mid December.

Butcher Hill (out in January) is a war simulation taking you across a river, through a jungle and into a village to face the hill in the name of the game.



Roy of the Rovers, out on the Gremlin Graphics label priced £9.99 tape, £14.99 disc

THE CPC conversion of **Barbarian II** is underway, says Palace Software boss Pete Stone, although it still has a release date of "real soon now".

But bad news for anyone who is watching the pennies, the compilation version will not follow until at least a year after the full-price game is released.

FIREBIRD Software's CPC conversion of **Star Trek** has disappeared down a big black hole. The official line, according to a Telecomsoft spokeswoman (no sexist letters please – they're all women at Firebird) is: "CPC Star Trek is no longer on our schedule". Our guess is we will see it eventually, but don't hold your breath.

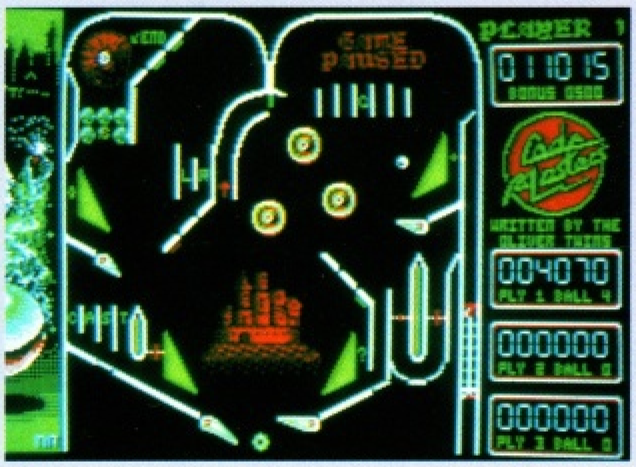
Melbourne House is to release its first game on the CPC since becoming part of the Virgin Mastertronic empire. **Terrorpods**, originally released for 16 bits on the Psygnosis label, has been converted to 8 bits by Icon Design.



Dark Fusion, new from Gremlin Graphics, featuring a giant alien monastery and bi-directional scrolling

The overall aim of the game is to destroy all the Terrorpods that lurk in a colony sector, then collect a Terrorpod component from one of the manufacturing units before warping to the next sector and continuing the mission. Terrorpods is out now priced £9.99 tape, £14.99 disc.

ADVANCED PINBALL SIMULATOR



NIGEL

PINBALL generally translates well to the computer screen. In this one the Oliver Twins have added a rather irrelevant plot involving a wizard, a volcano and a sacred almanac.

Each of the one to three players has three lives, and must keep the ball in play using four flippers and a deal of luck. The table is littered with objects that deflect the ball or give bonuses, and you get an extra ball every 10,000 points.

To finish a screen you must first break down a wall by hitting it several times, then ring the bell that the wall was blocking.

The beauty of this pinball interpretation is its ease of control. Holding down the spacebar squeezes the spring that fires the ball into play, then Z and M control the left and right facing flippers respectively. The only other key needed is P, which pauses the game.

The graphics are colourful and well defined. The ball's motion is faithfully reproduced, although it becomes a little flickery when moving quickly and sometimes gets stuck on one side of the screen for a long time. No problem in green.

Everything about this game is polished until it shines. Yet another Code Masters cracker.

Code Masters

Developer:
The Oliver Twins
Tape: £1.99

16/20

HOPPING MAD

THERE are a number of inescapable facts of life that recur time and time again in the design of computer games. Frogs, for example, hop. Likewise, wizards are well known for their alarming tendency to hurl spells at the drop of a pointy, star-spangled hat.

One of the first of these natural laws to make its presence felt, way back in the stone age of computer games, was the fact that balls bounce. Since those far off days we've all played games with bouncy balls, and jolly good fun they've been too.

Hopping Mad is a game for one or two players in which the object is to guide a line of four bouncy balls through a number of locations scattered about the world and space.

Points are scored by using the balls to remove apples from trees and to pop the balloons that float into view. Ten balloons are required to move you on to the next level.

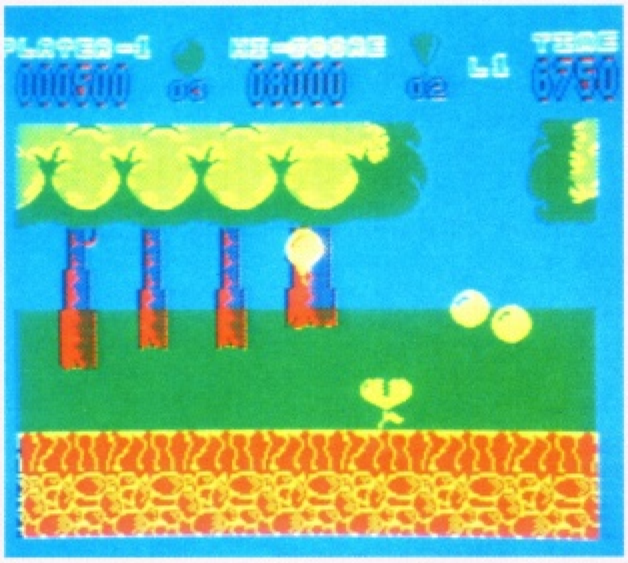
This is a game that's fun for a while, and which I'd recommend if it were a bit cheaper. I'm not saying it's a pushover, but during a coffee break I left it running on its own at level one and it reached level two quicker than I did.

elite

Developer: Neil Latarche
Tape: £9.99
Disc: £14.99

11/20

ZIT





NIGEL

SABIAN ISLAND

JAMES Bond scenario No. 953 – a nuclear bomb has been hidden somewhere in New York. Your only hope of stopping it exploding is to collect 16 pieces of a timing device, put it together, and switch the detonator off. You have six hours left.

The first thing you notice is that New York has unexpected scenery; it looks more like a Leaderboard golf course – little islands connected by bridges, with lots of water and grass everywhere.

You are seeing from above, and go around collecting bits and pieces including rifles, grenades, mystery bonuses and pieces of the timing device, while fighting off the forces of evil – an unlimited number of soldiers, who are only too accurate with their shots – by shooting them with a peashooter. As you move around, the map scrolls beneath you.

The graphics attempt to be shaded and fancy, but they look a mess, although everything is clear in green, which might explain it.

Your figure and the enemies look too similar, resembling hedgehogs more than human beings. At the right of the screen there is a digital clock, a grid on which the collected pieces are placed, and an indistinct map. Sound is run of the mill.

Sabian Island is nothing special, and it's hard to work up any excitement about the thousandth variation on a theme.

LEISURETEC

Developer: Jason Falcus
Tape: £9.95
Disc: £14.95

9/20

Compumart

A Great Deal More For a Good Deal Less!

Free FAST DELIVERY



Amsoft 3" CF2 DISKS

- Genuine Amsoft CF2 3" disks
- Guaranteed Amsoft quality and reliablity
- Supplied in the new protective sleeves
- Buy from the UK's largest supplier

-BOX OF- FIVE Only £10.39 Ex.VAT

BOX OF TEN Only £19.99 Ex.VAT

DISCOUNTS FOR LARGER QUANTITIES!

AMS 20L DISK STORAGE BOX

The ideal way to file your valuable disks protected from dust, spilt drinks etc.



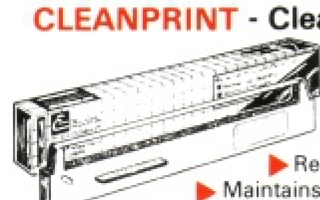
SPECIAL OFFER
FREE AMSOFT 3" CF2 DISK WITH EVERY AMS20L BOX

- Holds 21 cased 3" CF2's or up to 40 uncased.
- Hinged, smoked perspex lockable lid

Only £11.26 Ex.VAT

CLEANING

CLEANPRINT - Cleaning Ribbon NEW



- Removes ink deposits
- Maintains print quality
- Protects and lubricates the printhead

PCW 8 Series £6.95
PCW 9 Series £6.30

CLEARHEAD

- Safer data storage
- Prolonged disk and drive life
- Easy to use



£7.39

QUALITY PRINTER RIBBONS

Choose either...

Genuine Amstrad printer ribbons or one of our quality compatibles, either way it adds up to GREAT VALUE!!!

	Genuine AMSTRAD		QUALITY COMPATIBLE	
	FABRIC	CARBON	FABRIC	CARBON
PCW 8 SERIES	£4.30	£4.95	£2.95	—
PCW 9 SERIES	—	£3.35	MULTI-STRIKE £2.95	MULTI-STRIKE £2.95
DMP 2/3000	£4.30	—	—	—
DMP 4000	—	—	£4.95	—

All prices are ex-VAT and per ribbon

SUNDRIES

LISTING PAPER 2000Sheets 11"x 9½", 60gsm	£13.00
DUST COVERS PCW 8/9 Series from only	£8.49
SCREEN FILTERS PCW 8/9 Series	£14.95
CPC Mono/Colour	£10.39

24HR ORDER HOTLINE (0509) 610444

Access VISA

Superb Service

- Usually same day despatch on most items
- FREE, next working day delivery on all hardware, allow 2-5 days for other items
- Large stocks for immediate despatch
- FAST, efficient service

Great Guarantees

- If any item proves to have a manufacturing fault within 30 days we will replace free of charge or refund in full
- After 30 days and within the warranty period, we will repair at our expense

Better Back-up

- Friendly advice and after sales support
- Any problems quickly resolved to your complete satisfaction
- Special offers to existing customers We aim to please . . . and usually do!

All prices exclusive of VAT

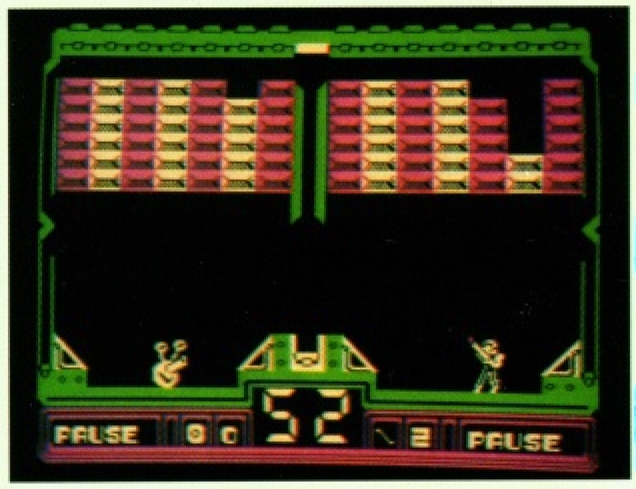
Prices/delivery subject to availability and only applicable to UK mainland, N. Ireland and BFPO's. E&OE
Compumart are licensed credit brokers. Simply ask for written details.

Compumart
A Great Deal More, For a Good Deal Less

COMPUMART LTD
FREEPOST (ACU)
LOUGHBOROUGH
LEICS LE11 0BR
TEL: 0509 610444
FAX: 0509 610235

HOTSHOT

LIZ



HOTSHOT is a cross between Pinball, Breakout and the gunfight at the OK Corral. The object is to use your graviton gun to capture a deadly plasma ball, which you then use to destroy blocks or to fire at flippers and bumpers.

You compete against either the second player or the computer.

Care must be taken, for if you hold the ball for too long or if it touches any part of you other than the end of your gun, you will be destroyed.

There are five characters, each with slightly different playing characteristics, one of which is assigned to each player at the start.

The game consists of five levels, with bonus levels between each. Some levels give you a limited number of lives while in others you compete against the clock. A target score must be completed at each level in order to move on to the next.

STAR ACU GAME

In the first three levels you compete against your opponent only in as much as while you control the ball he is unable to score. In levels four and five it becomes nastier. In level four your aim is to drown your opponent by hitting coloured bricks that raise his water level and decrease yours. In level five you attempt to destroy him by sending his half of the arena towards a mysterious black hole.

Hotshot relies on colour for certain parts of the action, owners of green monitors will find themselves missing out at times.

Strip away all the promotional tosh and you are left with a game that is well presented, simple in concept and great fun to play.

Addictive

Developer: Nick D'Mahe
Tape: £9.95
Disc: £14.95

17/20

1943

HERE we go – another final conflict in which you have to pulverise millions upon millions of the adversary, fighting for Truth, Freedom and the American Way.

The year is 1943 and the Japanese have the Midway Islands under control. Strategically, these islands provide the key to Pacific domination.

Needless to say, you consider these islands your own, and are willing to prove this with something a bit more substantial than a pointed stick. So off you go in your trusty P38 flying thing, with loads and loads and loads of bullets and some novel technology. This latter allows your P38 to have higher shooting capabilities and be completely overhauled in mid-air. Pretty novel stuff, since adhesive technology wasn't as good 40 years ago as it is today.



Off you go in your trusty P38 . . .

You are away with a large cloud of fumes and oodles of noise, to be greeted by a squadron of Zeroes hell bent on making your name appear as low down the high score table as possible. With the Aiieeeee's of the fallen Japanese flyers still ringing in your ears, you face a wave of large red aeroplanes intent on aerobatics. But they didn't reckon on you coming out of the sun with your twin half-inch machine guns chattering.

Destroy all the aerobatics planes and you get a bolt-on goodie – it could be an overhaul, superbullets, fan bullets, fan superbullets, rapid fire or auxiliary planes. All of these ensure that nobody is going to get past you, unless you let them.

Little Zeroes are not all we get – we get big planes, which take plenty shots to kill, and warships with intelligent gun turrets. Both of these want to see how many holes they can make in a P38 before it forgets how to fly.

We've got the obligatory smooth scroll of a narrow screen, add on weapons, and we've even got a few smart bombs – all we need now is three lives. More realistically than usual, we only have the one life, which dwindles until we get a refit or POW token. Once the little energy bar is no longer with us, neither are we.

The Pacific war hinges on you – can you make it swing your way? Will the battleship Yamato be destroyed, or will Ford become part of Mitsubishi and USA Ltd part of Japan Inc? Is 1943 all it is cracked up to be?

The first two questions are up to you to answer – the answer to the third is yes.

COLIN



GO!

Developer: Probe
Tape: £9.95
Disc: £14.95

16/20

HOPPER COPPER

CONSTABULARY duties to be done, a policeman's life is not a happy one. Especially when some particularly nasty felons have half-inched all the Groove Town police cars, leaving you to give chase on a kiddy's Astrohopper.

This is not as bad as it seems, because Groove Town is quite small, with only 13 different streets. They scroll by smoothly and speedily, which is not all that surprising when you consider that only a tiny horizontal strip is used for action, the rest being used for information about the crimes and their locations.

There are four different types of miscreants, all with their own traits. One carries the loot and is harmless. Another shoots at you. Yet another throws a club at you while the last drops tacks.

Being shot at or hit by a bullet slows you down and the tacks deflate more than your ego.

The criminals must be bounced on before they will submit to your long arm. They are not too keen on this, and will take any evasive action possible.



Turning into streets is very quick – the merest flick of the joystick with a touch on Fire will cause you to turn at an intersection. The robbers have a habit of coming almost within reach then disappearing down a side street, so your manoeuvreability is useful.

Hopper Copper is a moronically simple game. It's not a classic, but better than watching the rain.

SILVERBIRD

Developer: Prune Software
Tape: £1.99
16/20

BIG SCREEN HERO

YOU have been bitten by the Hollywood Gold bug and have hiked your way out West to to make it big like Eastwood, Karloff, Keaton, Ford and countless other shining stars.

You manage to get a break – it may only be for The Incredibly Cheap B-movie Company Inc., it may only be bit parts – but you're there.

You try to convince the director, one Hiram N. Firem, that you are worthy of the company's best movies. Mr Firem, having seen so many young hopefuls fail to follow up their words, consigns you to the bargain basement where low cost rip-offs are made. The ICBM Co. Inc. is famed for films like Star Battles, TE (Terrestrial Extra) and Spookbusters, all of which scraped a profit.

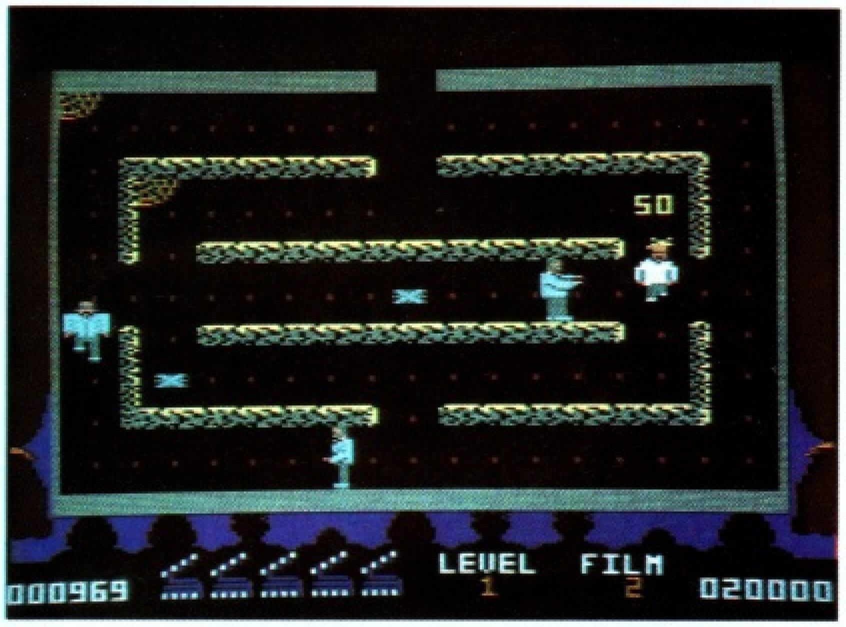
The first film in Big Screen Hero is a Tagliatelle Western, aptly named Clint Bites The Dust. The action scene involves shooting lots of Red Indians, who lob tomahawks at you if you miss.

You can buzz left and right, space invaders fashion, and shoot off as many rounds as your carbine can handle. The Indians come at you in 3D from dawn to dusk and all you have for shelter is an overturned carriage. Not quite a role for Olivier, but a start.

Hiram N. Firem must have recognised natural talent, because next you are playing the lead in a horror movie, Frankenstein Meets Dr. Jekyl *(sic)*.

Having taken the potion, Dr Jekyl *(still sic)* finds the house full of Frankenstein monsters, and the only way to get rid of them is by collecting all the little pills that are scattered about the floor, while the Frankensteins chase slowly after you. Not light years away from Pac Man, but it does have a nice line in digitised laughter.

The next film is a silent thriller – The Sawmill Massacre *(PG)*. The evil sawmill owner has tied your best-and-only girl to the slowly advancing sawmill table. In best beat-'em-up tradition you must spar with the evildoer, knock him out and stop the saw to prevent your girl from becoming a large stain on the woodwork.



The final film in the quartet is an all-expense-spared adventure movie. You play a dashing palaeontologist, Ginger Bones, and must make your way through all odds in the horrific Caverns of Doom. Arrows fly at you, large bouncing things bounce at you, drips drip on you, and the dragons drag on after you (Groan Ed).

This is the toughest film yet. It will need many takes to get right – frustrating because you've got to go all the way back through the other three films to get to it.

Only guts and determination will get you through Big Screen Hero to win an Oscar. Although there is nothing outstanding about this game, it manages to be mildly addictive. It is not the sound, nor the graphics, both of which are there in spite of themselves.

It's a fun wee game that suffers very slightly from being overpriced. Tinseltown may be paved with gold, but through the glitz there is pure grit.



LEISURETEC

Developer: Jason Falcus
Tape: £9.95
Disc: £14.95
15/20

FERNANDEZ MUST DIE



COLIN

WE find ourselves in the pretty little South American state of El Diablo, where usually the loudest sound is the rustle of the wind through the coffee groves. Today is different – today we are armed with a large gun, for the democratic government has been deposed and General "military atrocities" Fernandez is in power. This, it has been decided, is a bad thing.

The state of El Diablo is viewed from above – all we see of our little gun-toting person is a helmet and shoulders. We rush merrily about, despatching the hated enemy, being the heroic type.

We can get shot, but it isn't fatal in small doses. If we are accurate enough – and I mean pixel accurate – we can grenade the blockhouses and strongholds, and eventually win freedom for our country.

El Diablo is quite pretty in a low resolution kind of a way. The place is dotted with pretty little brown blobs, which are quickly discovered to be land mines and should be avoided like the proverbial something. Strange dungeons connect the sections of scrolling scenery. These house goodies such as gold and POWs.

El Diablioans must hate music because an iffy tune rings throughout the land. At least it can be switched off, unlike the enemies.

Although you can nip about quite rapidly on foot, various jeeps are scattered here and there to make travel faster. These are equipped with a large cannon, which requires the same care as your grenades – the control is far too finnicky.

The fun bit is flattening the enemies as you career about doing pretty three-point turns in your search for the strongholds. There are eight, all of which must be destroyed before Fernandez is killed.

Fernandez Must Die is not bad. It really tries to be different from Commando, and yet in trying to differ it becomes more like it. This isn't exactly an out-and-out shooty game, but it isn't anything much else. You don't get anything new for your ten or fifteen quid.

image works

Developer: Tony Crowther

Tape: £9.99
Disc: £14.99

14/20

LIVE AND LET DIE

STAR ACU GAME

WHEN you are an agent in Her Majesty's Secret Service you can be assured of never having a quiet Sunday afternoon to potter around the garden. The agent in question, Mr J. Bond, has to cope with a rather nasty drug problem. Not one of his own, you understand, but one posed by a certain Mr Big, who has this habit of peddling illegal recreational pharmaceuticals.

Big's HQ is in the wetlands near New Orleans and the only reasonable way of getting to them is by powerboat. To ensure you have slightly more than a fighting chance, Q has supplied you with a rather special powerboat. Not only has it got a top speed of something dangerous, but it also has a neat line in creative weaponry, such as a nasty cannon with a supply of very nasty missiles.

Since bespoke powerboats of a destructive persuasion do not come cheaply, you have a chance to practice on what look suspiciously like the Norfolk Broads. A percentage rating is given once your time or fuel is up. It is always dismally low.

Two other exercises are available, both allowing training in the various aspects required for the final mission. The Sahara exercise is a natural obstacle course. You even get to scrape the boat up a ramp, with accompanying graunching noises – shades of the original film.

The North Pole run is more of an out-and-out carnage drive with nasty boats and planes, most of which can be shot. Working out how to shoot the planes isn't immediately obvious but is, as they say, easy when you know how.

You are not entirely on your own on your one-man crusade to keep a sharper image than Jonathan Ross. Helicopters occasionally buzz overhead to dump fuel or extra missiles. You must drive over these to pick them up, but Sod's law dictates that the canister is dropped immediately in front of rocks.

The New Orleans "final" mission throws everything at you – tunnels, ramps, narrows, lock gates, waterside gun emplacements – generally the works.

Everything moves very quickly, so a sharp eye and very nimble fingers are required. Only when you've hammered through enough hell-and-high-water do you get a crack at Mr Big's dope emporium. The chances of actually getting that far are pretty slim, far slimmer than the ubiquitous Bond girl who is probably draped by the side of the able agent.

If this game leaves you shaken but not stirred, you can rely on James Bond 007 to remain unruffled. The presentation is as slick as the man himself.

ZIT

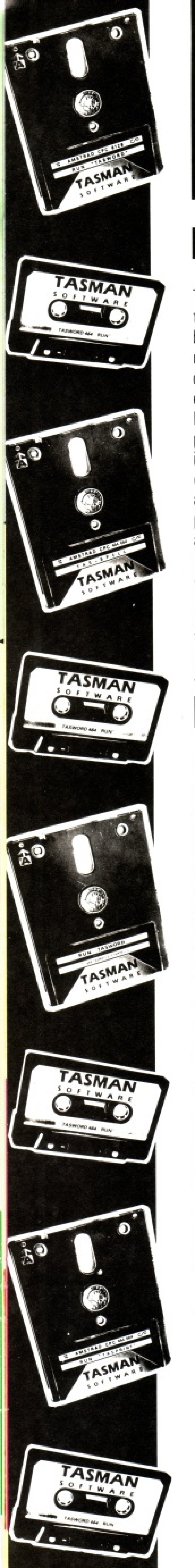


DM

Developer: Andy Williams

Tape: £9.95
Disc: £14.95

19/20



SOFTWARE THAT'S HARD TO BEAT

TASWORD 6128

The Word Processor — with Mail Merge

The established, powerful word processor for the Amstrad CPC 6128. TASWORD 6128 has been specifically developed to use 64K of memory as text space. This means a text file can be a massive 60,000 characters in length, enough room for over 10,000 words!

Featuring all standard and many extra word processing facilities TASWORD 6128 incorporates sophisticated print options, on-screen help, notepads, user definable keys allowing commonly used words, sentences or paragraphs to be typed with a single keypress and a powerful built-in data merge facility.

Extensive customisation facilities allow many of the facilities to be changed for personal requirements and saved into the program.

By combining power with ease of use TASWORD 6128 is the complete word processor for the CPC 6128. **Disc £24.95**

TASWORD 464-D

The Word Processor — with Mail Merge

The TASWORD especially developed to utilise the capabilities of the CPC 464 and 664 disc drives. Additional facilities include a larger text file size and automatic on-screen disc directories during save and load operations.

A major feature is the data merge facility. Mail merge, in which a letter is printed any number of times, each individually addressed to a different person, is just one application of this powerful facility. TASWORD 464-D is supplied on, and only runs on, disc.

Disc £24.95

TASWORD 464

The Word Processor

Your 464 becomes a professional standard word processor with TASWORD 464. Supplied complete with a comprehensive manual and a cassette which contains both the program and TASWORD 464 TUTOR. This teaches you word processing using TASWORD 464. Whether you have serious applications or simply want to learn about word processing, TASWORD 464 and the TUTOR make it easy and enjoyable.

Cassette £19.95

TASWORD UPGRADES

TASWORD 464 and Amsword owners: send your original cassette or disc (not the packaging) as proof of purchase and £13.90. Your original will be returned together with TASWORD 464-D or TASWORD 6128 on disc.

TASCOPY 464

The Screen Copier
for the CPC 6128, 664 and 464

A suite of fast machine code screen copy software for the CPC computers. Print high resolution screen copies in black and white and also large "shaded" copies with different dot densities for the various screen colours. TASCOPY can also print "poster size" copies — screen copies printed onto two or four sheets can be cut and joined to make the poster. **Disc £12.90 Cassette £9.90**

TAS-SIGN

The Sign Maker
for the CPC 6128 and PCW

Produce and print your own signs, posters, banners and large notices to get your message across with maximum impact.

A complete sign making package including four distinctive lettering styles, character heights from one inch to the full width of the paper, italics, underlining, borders, eight shading patterns, variable letter spacing, automatic kerning and line centering.

Signs may be printed across the paper or along the length of the paper to produce large eye-catching banners and notices.

Disc £29.95

NEW!

TAS-SIGN — additional fonts

Two new, impressive fonts for TAS-SIGN, the sign maker: ROMAN a clear, classical font and HOBART, a bold and imposing typeface.

Disc £12.50

TAS-SPELL

The Spelling Checker

Spelling mistakes and typing errors spoil any document whether it's a private letter or your latest novel. With TAS-SPELL you are free to be creative in the confident knowledge that your spelling won't let you down.

TAS-SPELL checks the spelling of text typed with TASWORD 464-D and TASWORD 6128 by comparing the words in your text with those in a dictionary of over 20,000 words. Suspect words are highlighted — you may correct, ignore (it might be a name) or even add words to the dictionary. Please note that TAS-SPELL only works with TASWORD 464-D and TASWORD 6128. **Disc £16.50**

TASPRINT 464

The Style Writer
for the CPC 6128, 664 and 464

A must for dot matrix printer owners!

Print Tasword output and program listings in a choice of five impressive print styles. Varying from the futuristic DATA RUN to the hand writing style of PALACE SCRIPT, TASPRINT gives your output originality and style! **Disc £12.90 Cassette £9.90**

TAS-DIARY

The Electronic Diary
TAS-DIARY for the Amstrad CPC 6128, 664 and 464 with disc drive

Keep an electronic day-to-day diary on disc! TAS-DIARY features a clock, calendar and a separate screen display for every day of the year. Each year stored on disc includes a memo pad and several note pages.

TAS-DIARY is an invaluable aid to keeping records, reminders, and any other data which is related to that most valuable commodity of ours — time! **Disc £12.90**

Tasman

PERFECTION IN PROFESSIONAL SOFTWARE

Springfield House, Hyde Terrace, Leeds LS2 9LN. Tel: (0532) 438301

Tas-Sign, Tasprint and Tascopy drive nearly all dot-matrix printers including those made by:

Admate	Canon	Mannesmann Tally	Shinwa
Amstrad	Citizen	NEC	Smith Corona
Astech	Datech	Newbury	Sord
Brother	Epson	Panasonic	Star
C. Itoh	Kaga-Taxan	Seikosha	

If you do not want to cut this magazine, simply write out your order and post to: TASMAN SOFTWARE, DEPT ACU, SPRINGFIELD HOUSE, HYDE TERRACE, LEEDS LS2 9LN.

I enclose a cheque/PO made payable to TASMAN Software Ltd OR charge my ACCESS/VISA number: ______________ Expires ______

NAME ______________ ITEM ______________ PRICE

ADDRESS ______________ £ ______

£ ______

£ ______

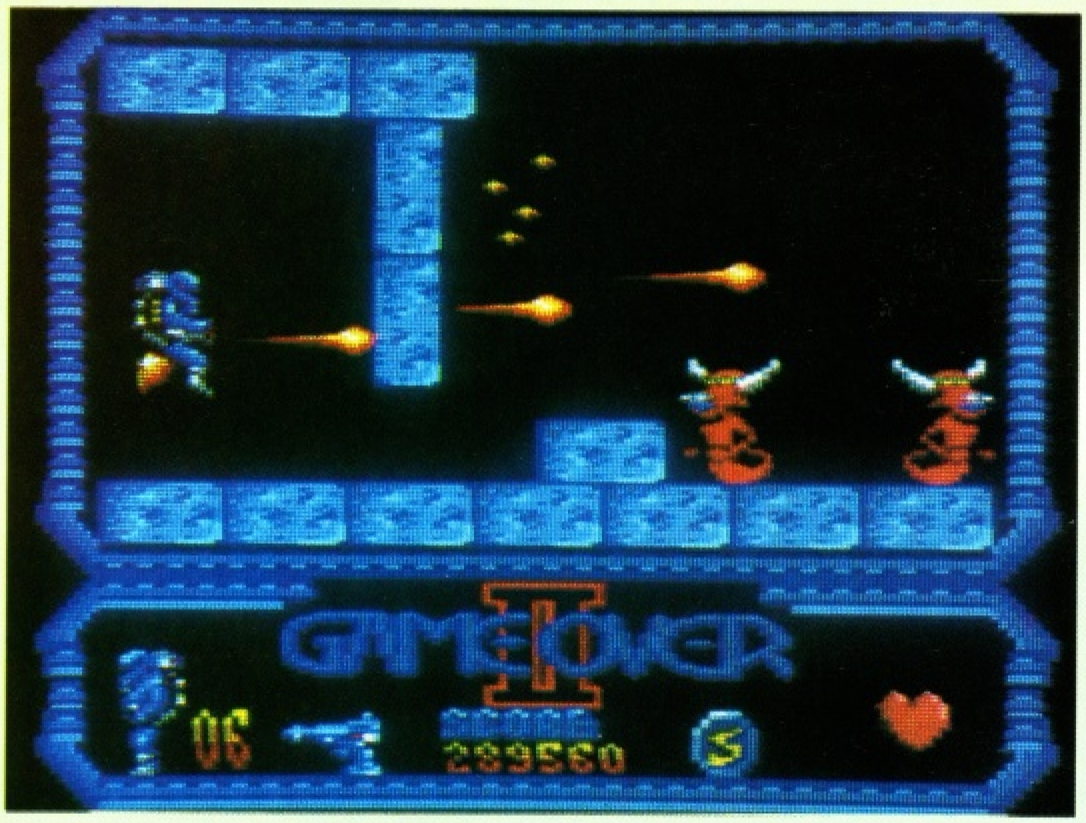
Outside Europe add £2.00 per item airmail. £ ______

Telephone Access/Visa orders: Leeds (0532) 438301 TOTAL £ ______

Please send me a FREE Tasman brochure describing your products for IBM/Amstrad PC ☐ Amstrad PCW ☐ Amstrad CPC ☐ ZX Spectrum+3 ☐ ZX Spectrum 48K/128K/+2 ☐ Commodore 64 ☐ Tatung Einstein ☐ ACU

Overseas: The following distributors of Tasman products may be contacted for the address of local suppliers. Many products are supplied in translated form: FRANCE & SWITZERLAND Semaphore Logiciels, CH 1283 La Plaine, Geneva. SCANDINAVIA Postboks 192, 1371 Asker, Norway. NETHERLANDS Filosoft, PO Box 1353 9701 BJ Groningen. GERMANY Profisoft, Sutthauser Str 50/52, D4500 Osnabrück. BELGIUM Easy Computing, Avenue Guillaume Lefever 30, 1160 Brussels. PORTUGAL Infoenova, Campo Grande, 28A, 1700 Lisbon. AUSTRALIA Dolphin Computers, Unit 2, 7 Waltham Street, Artarmon, New South Wales 2064. NEW ZEALAND Software Supplies, PO Box 865 Christchurch. USA Ramex International, 17620 26 Mile Road, Washington MI 48094. ITALY Omega Soft, Via C. Pascoli 3, 24100 Bergamo. SPAIN Ch'ces Informatica, Avda Isabel II, 16-8, Zoll, San Sebastian.

GAME OVER II



COLIN

GREMLA, the mad dictatrix who featured . . . um . . . prominently on the cover of Game Over, has been ousted by her once main man Arkos. In the heat of the ensuing celebrations – Gremla not being overly popular – Arkos disappears, which is a bit of a pity since he's the hero of the moment.

Word gets out that he's been ensnared by Gremla's cronies and stuck on the jail planet of Phantis. Phantis isn't very pleasant – even Club 18-30 turned down the possibility of package tours there.

Only one person has been to Phantis and returned, a certain Major Locke, so he is the natural choice to save Arkos.

Like all previous Dinamic games, Game Over II is a two-parter with an access code to reach the second bit. Part one scrolls nicely over the surface of Phantis, where all sorts of nasties do their best to make you history.

It's reminiscent of Scramble, and the basic idea of the first three sections of part one is to keep as many lives for the fourth section.

This last section involves riding on a standard issue two-legged fantasy beast of burden while trying to cuff as many nasties as possible with what looks like an electric yo-yo. This bit is fun, and is well worth waiting for.

The second load is the actual search for Arkos. You have to build a gun and find a pass before you can enter the prison area itself. From the prison portal on, I'll wager that you'll need some kind of poke to complete it.

The blue sea monsters and piranhas I can handle; the blobs of magma and the red guardians, no probs. But there is one bit where what look like wholemeal sugar lumps crash down from the sky. A couple of screens of this, and it really is Game Over.

The game is beautifully presented, with lovely graphics and pleasant noises. You even get the original Game Over free, plus a mildly tacky poster. Probably Dinamic's best yet, slightly spoiled by the impossibly difficult final stages.

DINAMIC

Developer: Carlos Abril

Tape: £8.95

Disc: £12.95

17/20

FIRE AND FORGET

NIGEL

YOU are the commander of the Thunder Master, the world's ultimate fighting machine. Your mission is to save the world from the Intergalactic Liberation Organisation.

You are armed with the latest tetranuclear propulsion missiles, which are guided by an undecodable oral frequency and have magnetic sustentation MV modules with a firepower of 117 gigawatts per second.

At the start of the game you are shown a map of the world. You have a choice of six locations for your conflict.

You travel along the road at any speed you fancy. Fuel consumption is not speed related. You will encounter tanks, helicopters, mines and armed bunkers, all trying to blow you away. You have to act – Fire, and forget them. That sounds like a good name for a game.

On the way you have to collect blue cones to replenish your fuel supply. One is enough to fill up, the rest are added to a bonus. If you succeed in reaching the end of the war the bonus is added to your score. On the disc version your high score, if you get one, is saved to disc.

Fire and Forget could be described as Crazy Cars with guns, but this would be a little unfair because it's a lot better than that.

The graphics are bafflingly similar to the 16 bit version. The sensation of speed is very well done. In fact, if you go too fast it is all too easy to miss fuel cones and run straight into a tank or some other equally deadly device.

This is an excellent variation on the theme. Very addictive.



Developed: In house

Tape: £9.95

Disc: £14.95

18/20

SAMURAI WARRIOR



NIGEL

IT is the 17th Century in Japan. You wander through troubled lands on a quest. You are Myamoto Usagi, better known as Usagi Yojimbo, a Ronin rabbit.

Your task as a wandering lordless samurai is to rescue your old friend Noriyuki from the clutches of the evil Hikjii by battling your way through hordes of ninjas, bounty hunters and other hostile creatures.

All the characters are based on animals. You are a rabbit, Noriyuki is a giant panda, and there are hamsters and foxes and things.

If you ignore the zoological element of Samurai Warrior, what we have here is yet another martial arts game – a sort of Way of the Exploding Ferret if you will. Despite this, the game is very playable.

The top half of the screen is the playing area and the bottom half is further sub-divided into three parts, which consist of a rabbit's head that changes when you enter fighting mode, a status area, and an area for messages like "It's a hard life being a peasant" and "There he is, let's get him".

Apart from rescuing Noriyuki you have to build up your karma and stash of money by killing enemies. Giving money to beggars can also increase your karma, but some must be kept back for paying tolls and buying food.

Killing the wrong characters will decrease your karma. No more karma, no more game.

FIREBIRD

Developer: Source
Tape: £8.95
Disc: £14.95
13/20



THE EMPIRE STRIKES BACK

PLAY starts with four distinct phases. In the first you guide Luke Skywalker's snowspeeder over the surface of the rebel planet, destroying animated British Telecom towers, trying to stop these robots from sending radio transmissions to Darth Vadar.

The second phase invloves some large lumbering mechanical walking war machines. Try saying that after a night out with Han Solo.

After a brief sortie with the Tie fighters you are plunged into an asteroid storm, where you must avoid collisions with large Rubik cubes. Failing to survive the asteroids will terminate your contract with George Lucas and ensure that you don't take part in any sequels.

The vector graphics are fast and smooth. Colour is at a distinct minimum, being used to distinguish between the enemy and their laser fire, so playing on a green screen monitor is no problem.

Extra bonuses in the shape of letters from the word Jedi pop up occasionally and wander about the screen. Collecting all four makes you a fully fledged Jedi Knight, impervious to damage for a short time.

The music which plays throughout the game is very good – you almost expect Alec Guiness to pop over your shoulder and mention something about a force.

Unfortunately the main force in this game is that of boredom. After complteing one level it's straight back to the same old thing.

Nice graphics, great tune, lousy gameplay. The high score table is good though.

DM

Developer: George Iwanow
Tape: £9.95
Disc: £14.95
12/20

THE TRAIN

IT is midnight on a day in August 1944. The Nazis are planning to smuggle French art treasures out of the country. No, zee Fallen Madonna wiz zee Beeg Boobies isn't being hidden in a smoked sausage – instead priceless Picassos and muddy Monets are on board a train. You are a leader in the Resistance, and must rescue them.

How droll.

Anyway, your first mission is to capture the train, which is sitting in a station. This is accomplished by shooting Nazi snipers who obligingly turn the lights on before they fire out of the station windows.

Once aboard the train you stoke up the furnaces, release the brake and open the throttle. The train will start moving off. You have to drive it from Metz, near the German border, to Riviere on the west coast of France, where you will be met by the Allied forces.

Of course, it's not an uninterrupted ride. You will be bombed and strafed by Nazi fighter planes, bridges must be captured and points must be switched.

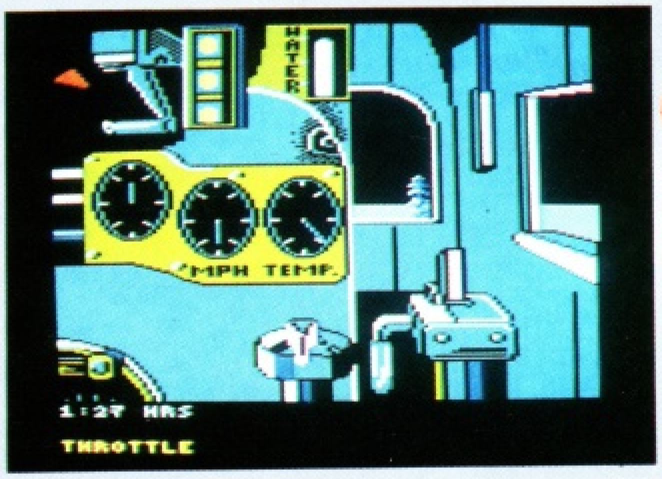
Your Resistance friends will provide you with the information you need to do this by broadcasting messages over the telegraph at stations under their control. These stations also provide repairs, coal and water.

There are four graphical screens plus a status screen. The most important display is that of the engine room, which allows you to control the engine by blowing off steam, shovelling more coal, and slamming on the brakes whenever a bridge approaches. If you are moving too fast when you do this, the gearbox will be stripped.

The Train is a tough game, with a lot to do in very little time. Fortunately the controls are pointer-based and very easy to learn. The boarding sequence quickly becomes tedious; it would be nice if it could be skipped.

ELECTRONIC ARTS

Developer: Accolade
Tape: £8.95
Disc: £14.95
12/20



NIGEL

The first time Westing's statements went out on time.



Was it because all of the N series 9-pin business printers are so remarkably fast and reliable?

Was it because the NR-15 we've just started using is a quality full-width business printer?

Was it because all Star printers have a push-feed tractor built in and a fully automatic cut sheet feed option?

Was it because the high density NLQ produces excellent quality print at 60cps with full width draft printing at 240cps?

Was it because our Star NR-15 copes so easily with the spreadsheets, stock listings, invoices and statements?

No, the reason my department completes its paperwork on time is all down to me.

Because I decided to choose the Star N series 9-pin printers. And with prices from around £400, even that took no time at all.



THE star COMPUTER PRINTERS

Star Micronics U.K. Ltd.
Craven House, 40 Uxbridge Roa
Ealing, London W5 2BS.
Telephone: 01-840 1800.

A division of
Star Micronics Co., Ltd., Japan.

Please tell me how I can complete my work on time using the Star 9 pin N series business printers.

Name ______________________

Company ______________________

Address ______________________

____

Postcode ______________ Telephone ______________

Or just call Belinda on 01-840 1829.

9ACU1

BIOSPHERES

NIGEL



SWEDISH Nobel Prize winner Svante Arrhenius believed that the seeds of life were brought to Earth on a giant asteroid. Little was he to know that the aliens would copy his idea, transporting deadly beings instead of DNA.

In Biospheres you are in control of a "strong but powerful podule" which worms its way inside the asteroid to knock out the nasties, the accelerators that speed up their life cycles, the bioshields that protect them, and the biobombs that set off a chain reaction which destroys the asteroid when it reaches Earth.

There is also the occasional canister-like object to be shot at or picked up for bonus shield strength or extra points.

There is not much else to say about the plot, except that it is highly unoriginal and screams "Gauntlet clone!" very loudly at you.

The old scenario, however, is a misleading cover for a very well programmed game. From the enormous characters that are used to flash messages on to the screen, to the fast scrolling that slows down only slightly when the nasties appear, to the various three-channel tunes and good spot effects – everything comes off beautifully.

The graphics are good, although the colours could have been better selected – the nasties are very hard to see in green.

Control is reasonably easy, although the keyboard is slicker than the joystick. Diagonal movement, never the easiest to achieve, is very awkward with this program, and the diagonal scrolling is jerky.

Overall though, excellent stuff, consolidating Silverbird's position as one of the best and most consistent budget software houses.

SILVERBIRD

Developer: C. Hogg and J. Dave Rogers

Tape: £1.99

17/20

ARTURA

COLIN



"FANCY writing another game, Alf?"

"Yeah, why not, Bert. What about?"

"Well, we haven't done a Swords and Sorcery game since Tuesday. 'Ow about one of them?"

"Good idea, Bert. Chuck over the Bumper Boys' Book of Authentic Myths 'n' Legends and let's see who we can find ..... 'Ere's a good one. 'Ow about King Arthur – plenty of fighting an' magic an' runes an' stuff like that".

"What, you mean those wrinkly black things me mum gives me for breakfast?"

"No, Bert, runes. You know, joined up writing for fairies."

"Oh yeah. I thought you meant them other – you know – wossnames. Sounds great – let's give it a bash."

THUS was born Artura in the house of Gremlin. A mighty game, a game long in the forging, wrought with much cunning and artifice and cloaked with mysticke and magycke and other such flowery words of which you are all by now utterlye piggesycke.

Arthur, who is now covering his tracks and has changed his name to Artura, is a fifth century warlord intent on unifying the warring kingdoms of Britain in order to stem the tide of invaders. To do this he must locate the sacred Treasures of Albion. Only Merdyn, his friend and adviser, knows of their location, and he has vanished. The only possible source of help is Nimue, Merdyn's assistant, who has herself been kidnapped by Morgause, Artura's evil half sister. Now read on.

You decide to rescue Nimue. In order to travel to Morgause's stronghold you must use the mystical wheel of Cerridwen. Once there, you fight your way past her servants, seek out Nimue, recover the rune stones, which will enable you to return to Camelod to locate the Treasures. Simple. Isn't it?

This is one of those games which dumps you in the middle of a situation and leaves you to get on with it with very little assistance from the instructions.

After a certain amount of wandering around it becomes apparent that you are already within Morgause's stronghold – a maze of dark corridors, open courtyards and hidden perils.

You will notice a number of gateways as you explore. Standing within these and selecting up or down with your joystick or keyboard will transport you about the stronghold and enable you to search for Nimue and the runes.

The stronghold is heavily populated by eagles and sword-waving soldiers. These appear to be unusually battle shy, and there is not a great deal of combat. The main dangers are running out of time or falling into one of the rat and spider-infested pits, from which there is no escape.

Artura is a thought provoking rather than an exciting game, and as such it takes time to appreciate its entertainment value. First impressions are likely to be somewhat negative. It is an attractive game with good graphics, although the sound effects are uninspiring.

If you're looking for something that provides a rush of adrenalin and can be played in five minutes, Artura is not for you. For the more sedate, it has more to offer and is worth checking out.

It has all the blood curdling, thrill-a-minute action of Conan the Librarian, absorbing rather than exciting. Artura is a game that grows on you the more you play it.



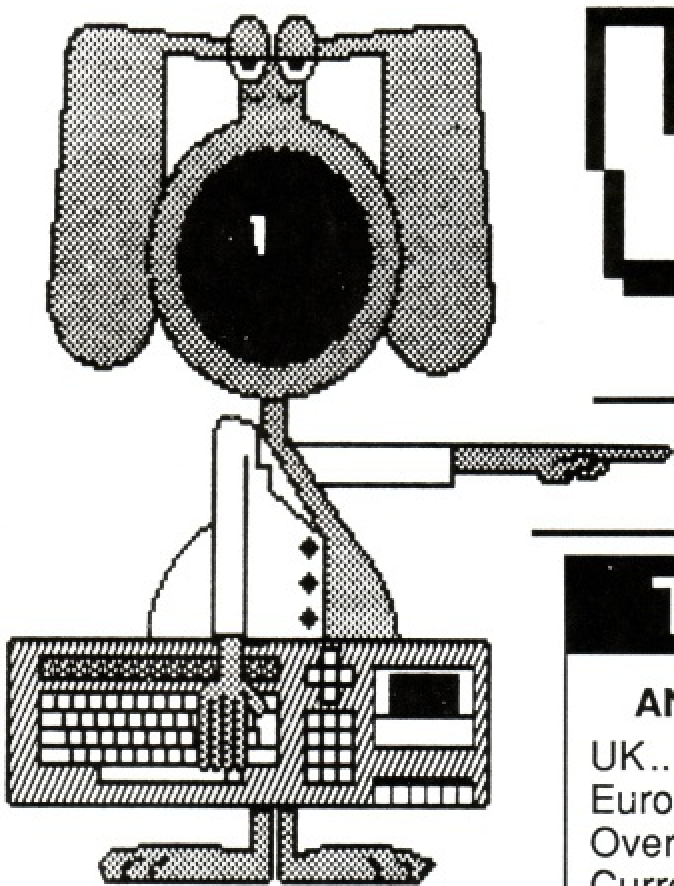
GREMLIN

Developer: Sentient Software

Tape: £9.99

Disc: £14.99

14/20



WACCI

unbeatable prices, unbeatable servic

THE FANZINE

* Fully illustrated
* Over 20,000 words per month
* Proper A4 format

Letters, Basic, Comms, Mcode, Hardware project and much more.

A truly Alternative Fanzine

ANNUAL SUBSCRIPTION RATES

UK	£12.00
Europe	£18.00
Overseas	£24.00
Current issue	£1.00

AUNTIE JOHN'S CONCEPT DISC

SIX GREAT GAMES ON ONE WACCI DISC

Dripzone * Strip Pontoon
Beetlemania ** Englebert
Saucer Attack *** 3Dmaze

£6.50

RUNS ON 6128 OR 464/664 WITH EXTRA MEMORY

THE PUBLIC DOMAIN SOFTWARE

CPM DISC 1 – MACHINE CODE TOOLS — Price £5.50

Z80 and 8080 assemblers, Z80 to 8080 to Z80 code translator, Debugging monitor and assembler, Reverse assembler, Binary file comparer, plus NewSweep and more.

CPM DISC 2 – COMPUTER LANGUAGES — Price £5:50

Small-C, Prolog, Lisp, EBasic, Small-C-Interpreter plus NewSweep.

CPM DISC 3 – FILE AND DISC MANAGEMENT — Price £5.50

Library utilities, Disc quality checker, Unix GREP command, PCW disc reader, Disc sector editor, Text file sorter, Word counter, plus NewSweep and more.

CPM DISC 4 – AT YOUR LEISURE — Price £5.50

Cave Adventure, Chess, Othello, Golf, Word search, Biorhythms, Maze generator, On-screen calculator, Prolog, Comms utility, plus NewSweep and more.

CPM DISC 5 – THE BUSINESS — Price £5.50

Scrivener spreadsheet, Inventory database, Powerful text editor, Spelling checker with dictionary, Sorter, Word counter, Comms utility, plus NewSweep and more.

CPM DISC 6 and 7 – PASCAL PLUS (Two Discs) — Price £9.00

Pascal, SCi, Cobol, EBasic, Powerful text editor, plus NewSweep

CPM DISC 8 – MORE COMPUTER LANGUAGES — Price £5.50

Forth, Stoic, Cobol, Expert 86, Powerful text editor, plus NewSweep

PLUS * PLUS * PLUS * PLUS * PLUS
Public Domain software support
available to WACCI subscribers.
Mega-big homegrown library.
Goods by return with Postal Orders

THE SPECIAL OFFERS

Rombo rom box	£27.0
5 x Amsoft CF2 Discs	£12.9
10 x Amsoft CF2 Discs	£23.9
DMP2000 Printer Ribbons (each)	£2.9

	Disc	Ror
Protext (CP/M+)	£47.00	-
Protext	£21.00	£31.0
Pocket Protext (CP/M+)	£23.25	-
Prospell	£19.50	£27.2
Promerge	£19.50	-
Promerge Plus	–	£27.2
Protext Office	£27.25	-
Protext Filer	£19.50	-
Maxam	£21.00	£31.0
Maxam 1.5	–	£23.2
Maxam 2 (CP/M+)	£39.00	-
Utopia	–	£23.2
BCPL	£19.50	£23.2
BCPL (CP/M+)	£19.50	-
Model Universe	£15.00	-
Arnor C (CP/M+)	£39.00	-
Micro Music Creator	£11.95	£19.9

VIDI-CPC Digitiser	£68.0

WACCI CPC, 59 THE GREEN, TWICKENHAM, MIDDX TW2 5BU

Est. 1986 – Phone 01-898 1090

NEMESIS – The Original Meddlers

BONZO SUPER MEDDLER

"The best tape to disc transfer utility available", WACC1 6/88.

THE BEST SELLER?

We wouldn't know – nor does it matter! What does matter is that BONZO SUPER MEDDLER transfers MORE games from TAPE to DISC than any other program. A triple refund to the first person to find another program to beat it! It's time to let results speak for themselves, so here is a list of SOME of the 700 plus games that will transfer to disc with BSM, 464/664/6128.

ANTIRIAD, ARKANOID, AVENGER, BARBARIAN, BMX SIMULATOR, BUGGY BOY, BOBSLEIGH, CYRUS CHESS, CAULDRON 1 & 2, COBRA STALLONE, DEACTIVATORS, DAN DARE, DRILLER, DARTS-180, EXPRESS RAIDER, EQUINOX, ENDURO RACER, FOOTBALLER OF YEAR, FLYING SHARK, FIRETRAP, GREMLINS, GUADAL CANAL, GRAND PRIX SIMULATOR, 3D GRAND PRIX, HOPPING MAP, HACKER, HIJACK, IKARI WARRIORS, ICE PALACE, JETSETW, JACK NIPPER, JOE BLADE, KNIGHT ORC, KNIGHTMARE, KUNG FU MASTER, LEADERBOARD, LIGHTFORCE, LIVING DAYLIGHTS, METROPOLIS, MICROBALL, MONOPOLY, NEXOR, NINJA SCOOTER SIM., PYJAMARAMA, POGO OLYMPICS, REFLEX, RED OCTOBER, RAMBO, SCRABBLE, SUPER STUNTMAN, SUPERSPRINT, STAR RAIDERS II, SKATE BOARD KIDZ, SWORD SLAYER, STAR TROOPER, SPINDIZZY, STRYFFE, TT RACER, TOPGUN, TRANSMUTERS, TETRIS, TANIUM, THRUST 1 & 2, VAMPIRE, WEREWOLF SIM., XOR, YOGI BEAR

and OVER 700 others!

Isn't it time you got the BEST? Send your disc-based utility to be transformed into BSM & HACKPACK for just £8.00. If you haven't got one then BSM & HACKPACK with full instructions, details of over 700 transfers, and our current NEWSLETTER.

£12.50 inclusive. Supplied on disc

BONZO BLITZ SPEEDLOCKS TO DISC

"HIGHLY RECOMMENDED" – WACCI, 12/87

BONZO SUPER MEDDLER will cope with a large number of SPEEDLOCKS, but for the enthusiast we developed BONZO BLITZ as the first utility to deal with all forms of SPEEDLOCK. Always up-to-date, and still the BEST. Works on 464/664/6128. A few examples:

ALIEN HIGHWAY, ARMY MOVES, BLACK MAGIC, BEACH HEAD 1 & 2, CATCH 23, DALEY SUPERTEST, DIZZY, ELEKTRAGLIDE, FRUIT MACHINE, FREDDY HARDEST 1 & 2, GAMEOVER 1 & 2, GREAT ESCAPE, MATCHDAY 1 & 2, MIAMI VICE, MADBALLS, METROCROSS, SUPER HANG-ON, PHANTOM CLUB, ROAD RUNNER, REVOLUTION, SCRABBLE, SUPERHERO, TRANSMUTERS, WIZBALL, ATV SIMULATOR

WORD CLASS LEADERBOARD and ROADRUNNER although "multi-loaders" will completely transfer if you have BSM to asist! All other "multi-loaders" – main file only. BLITZ was also the first to deal with the "NEW" SPEEDLOCK variation and without confining transfers to expanded machines!

£12.50 inclusive. Supplied on disc

UPGRADES: BSM or BLITZ, £3.00 (return disc!)

BONZO's FLASHPACK

"Best all round basic extension program seen", WACC1 3/88.

FLASH BASIC uses 70 RSX's in a fast versatile and very powerful implementation. It is relocatable and thus usable with hardware expansions. COMPACT – it uses only 8k of memory, and a "mini" version use only 3K! YOU can produce "stand-alone" programs written in FLASH BASIC! BONZO's FLASH-PACK is a very full DISC containing FLASH BASIC, DEMOS and UTILITIES written in FLASH BASIC. The DISC EDITOR is one of the the best you'll find – anywhere!

Some of the RSX's employed in FLASH BASIC are almost mini-utilities themselves; here's a few –
MEMORY COMMANDS – I M.EDIT, [editor!], I M.SEARCH. I M.LIST, I M.MOVE
DISC COMMANDS – I D.FORMAT, I D.READ, I D.WRITE, I DEPRO I HEADER
PRINTER COMMANDS – I POSTER, I P.CDUMP, I P.ON, I P.DI, I PSEND
SCREEN/OTHER – I BIG [big chars], I BOX, I COLOUR, I PAUSE, I LINE I SLEEP, I SORT, I MENU, I CALL, I SCR. PUT, ISCR. GET, I KEYS, I INFO

Documentation supplied is very extensive, and the built-in HELP can quickly locate the area of interest and send information to the screen or printer.

BONZO's FLASHPACK £12.50 inc. Disc
A SECOND DISC of other major utilities is also now available

BONZO's BIGBATCH £12.50 inc. Disc

This contains a very fast and flexible DATABASE, a superb FOOTBALL POOLS PREDICTOR, both written in FB, plus a user-friendly and memory saving SCREEN & SPRITE DESIGNER. It is not necessary to have the FLASHPACK disc to take advantage of BIGBATCH

BONZO's DOO-DAH

"This is the best I've seen in a long while. . . . I recommend it"
– AMSTRAD ACTION, JUNE 1987

FEATURES: BIGBONZO FORMAT
A REALLY USABLE 203K per SIDE FORMAT, with all the support files to maximise it's use. *PLUS* – All the disc housekeeping features that you could possibly want, including "Cloning", Directory & Sector edit, Disc search, Formatting, Read sectors, Filecopy, etc. *ALL FUNCTIONS* are effective on normal, enhanced, and the majority of "funny formats"

MANY UNIQUE FEATURES. supplied on **DISC**
£12.50

NEMESIS (ACU)
TEL: **(0933) 623967**

IMPORTANT NOTE: We close from December 14th to January 5th
ALL ORDERS sent by return: Cheque/P.O./ACCESS
10 Carlow Road, Ringstead, Kettering,
Northants, NN14 4DW

PRODUCE PICTURES LIKE THESE IN "MINUTES"
USING A DMP2000/2160/3000/3160 PRINTER AND THE

DART SCANNER



A remarkable new image scanning system which enables you to recreate & store pictures, documents, drawings, photographs etc.

- **No camera or video source needed**
  Simply feed your original into DMP2000/ 2160/3000/3160 printer (does not affect normal printing operations).
- **Compatible with AMX Pagemaker**
  and any light pen or mouse which works with standard screen format
- **For all CPC computers**

Features:
Scan – Magnification x1, x2, x3, x6
Print – Full Size/Half Size, Load & Save to Tape or Disc, Area Copy, Scrolling Window, Zoom Edit, Box/Blank, Clear Area, Add Text, Flip Screen, On screen Menu.

Applications:
Advertising/Artwork, Letterheads/Logo's, Newsletters & Leaflets, Games Screens.

Package Comprises:
Scanner head, Interface, Software on Cassette or Disc

R.R.P. £79.95
including VAT and P&P



DART Electronics

Unit B5
Oulton Works
School Road
LOWESTOFT
Suffolk NR33 9NA

Telephone: (0502) 513707

Trade & Export enquiries also welcome

BY FAIR MEANS OR FOUL



NIGEL

THIS is the first release from Superior Software since taking over Alligata – the first of many, we are told. The objective of By Fair Means Or Foul is simple, to defeat each of your opponents and become world champion.

You have 15 rounds in which to win a bout. You can do this either in the normal way or, if the referee isn't looking, by giving your opponent a head butt, knee in the stomach, or even a kick in the groin.

Unlike the other boxing simulations, a knockout does not give you the bout, just a loss of one of your opponent's lives. When either of you loses all five lives, the bout is over. Another life is lost if the ref cries foul.

You control your player by a variety of joystick or keyboard moves. The graphics, while not brilliant, are adequate for this type of game.

The background is just shadows. Indistinct figures will cry out in the form of speech bubbles, giving comments regarding your performance or some suggestions for the ref.

Sound effects are limited to the thwack thwack of the glove, boot or head.

There is not a lot to distinguish By Fair Means Or Foul from the boxing games that preceded it, except for the ability to help yourself by hitting below the belt. Know what I mean, Harry. (Sorry, couldn't resist it.)

SUPERIOR SOFTWARE Limited

Developers: M. and T. Simpson
Tape: £9.95
Disc: £14.95

12/20

MAD MIX GAME

FROM time to time you will have been on the receiving end of statements to which the only possible response has been, "Oh yeah?", An example of this is: "The cheque's in the post".

Another example, one that crops up all too frequently in the world of computer games, is: "One of the most compelling and addictive games ever released!" This is usually describing a game of such mind-numbing tedium that completing your latest tax return seems inviting in comparison.

So what can you expect from Mad Mix Game, about which Pepsi and US Gold make just such a claim?

Well, the storyline is so feeble and of so little relevance to the game itself as to be not worth describing.

The object is to guide the Pepsiman through 15 mazes, eating the spheres that lie along the pathways while dodging hordes of ghosts and other evil creatures, which will either claim one of your lives or clamp and replace the spheres you are trying to eat.

The ghosts inhabit a ghost generator, which you will have to enter on some of the higher levels to eat the spheres you will find there.

Mad Mix Game is a fairly standard maze game. However it does have one feature of interest – eating icons will transform you temporarily into one of several characters.

As the Pepsiman you are vulnerable against most of your enemies. The Angry Pepsiman and the Pepsipotamus enable you to fight back, as do the Pepsiship and the Pepsitank, although with these last two you have limited freedom of movement. The Pepsidigger is used to unclamp spheres, but is vulnerable to attack.

Pepsi and US Gold is a strange combination. I'm not a great lover of fizzy drinks, finding them not very satisfying and full of wind. Much the same could be said of Mad Mix Game.

U.S. GOLD AI American Software

Developer: Toposoft
Tape: £7.99
Disc: £11.99

9/20

ZIT





NIGEL

OFF SHORE WARRIOR

RACE one puts you up against three rivals on Lake Michigan, USA, in the year 2049. The controls are simple, joystick or cursor left, joystick or cursor right, joystick or cursor forward. Fire or spacebar lets loose a missile.

The missiles are there to waste opponents; you can either shoot them or push them on to the rocks. The latter is more fun.

At the end of each race you get a bonus if you came first, and then it's on to the next race where the number of opponents grows and your missiles are replenished. But you'll always have fewer missiles than opponents.

You have a further obstacle in the form of waves. Hit one of these at speed and it's wheeee time as you fly through the air. Meanwhile half-a-dozen boats whizz past underneath.

In race two the scenery shifts to futuristic Lake Victoria in Africa. Race three brings you backdrops of a 21st century Gulf of Finland.

After the fourth race you go back to race one again, but a year further on.

Off Shore Warrior has the stunning graphics that one expects from French CPC programmers these days. The backdrops are expertly drawn and scroll smoothly.

The speedboats are nicely detailed, right down to the spray and a wake.

In Live and Let Die, there is more to do, more to pick up, and more of a plot. Off Shore Warrior, however, has that special mixture of charm and graphics that can only come from the wrong side of the English Channel.

Developer: Titus Software
Tape: £9.95
Disc: £14.95

16/20

AMSTRAD Computer User EXCLUSIVE READER OFFER

UTILITIES UNLIMITED!

We have brought together the very best non-games programs culled from the issues of Amstrad Computer User.

These clever programs cover animation, business, music, games hacks and much more. Whatever your interest, there is something here for you – and at a very special price.

AMGRAPH*
Amgraph allows you to enter tables of figures and present them in a neat, graphical form. In addition to pie and bar graphs, this program offers stacked and 3D bar graphs, all with automatic scaling and an Epson compatible printout facility. *November 1985.*

SORCERY PLUS HACK*
A suite of programs that makes playing Sorcery Plus easier and more fun. You can easily adapt the sprites to your own design, and increase your survival chances. *January 1986.*

HOMESPREAD
A simple but flexible spreadsheet program you can use without having to learn all the complicated commands of a big spreadsheet, yet still perform some startling and sophisticated operations.

DIARY
A disc-only program that demonstrates how to simulate random access files under Amsdos without resorting to machine code. Diary is a useful program for making sure you don't book a table at the local sushi bar when you'll miss EastEnders.

MODE 3*
Mode 3 is a two-screen, four colour, Mode 0 that lets you have data on the background screen which you can't see, but which is nevertheless there. Very fast animation can be created by flipping instantly from the foreground to the background screen. *January 1986.*

ANIMATOR*
Animator is a wire frame drawing suite of programs that allows you to put together a number of key frames, and the software will 'tween' them to produce a finished cartoon. *April 1986.*

TRACE*
The TRON and TROFF commands are very useful for debugging basic programs, but they often make a mess of the screen. This routine allows you to re-direct the trace to a screen window or printer. *December 1985.*

CHORD FINDER*
This program can display over 2,000 chords, and up to 36 chord shapes can be saved to tape or disc and loaded when required. *September 1985.*

JET SET WILLY HACK*
Infinite lives and a magic teleport help you trip around miner Willy's mansion. Note



that this hack will only work with The Final Frontier version and not with the versions of the game that appeared on a compilation. *September 1985.*

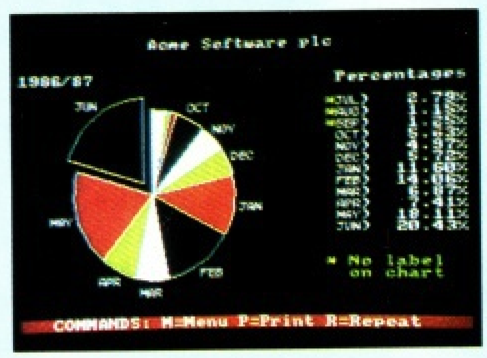
DOUBLE HEIGHT PRINT*
A useful routine for enlarging letters on the screen. So if you are a tall type, then letters help you to expand your horizons. *September 1985.*

ELITE DISC HACK
So you have been playing Elite for a while and are still mostly harmless. If you want millions of credits, a few bolt-on goodies or even the hallowed Elite status, then ZZKJ's program can provide it. Instantly.

JUSTIN'S SCROLL*
If you look in wonder at arcade games in which spaceships whizz over a planet's surface at one million miles per hour and wish that you could write a program to do that, then you need Justin's Scroll. Peter Green adapted this program for the scrolling in Rimrunner, and the Zeit Corporation found it came in useful for BMX Kidz. This *is* how the professionals do it. *June 1987.*

RSX LISTER
Most utility roms contain an RSX lister, but they only list those RSXs that are in rom. What about those that have been soft loaded? With this routine you can reveal *all* the RSXs hidden in your ram.

In some cases you will need to refer to the issue of ACU in which the programs appeared. In the list above these are shown by * followed by the month. If you do not have these issues, you can send for the Utilities Unlimited documentation pack at the special price of £4.95.



PRINTER SPOOLER
When you print out a file from disc Arnold spends all his time printing. With a posh computer, like the PC, this kind of job can be done in the background enabling you to carry on using the computer while the printer is working. With Printer Spooler your humble CPC can do the very same thing. It's just like having two computers.

EPSON DUMP
A dump for Epson compatible printers, ideal for taking hard copies of Mode 1 or Mode 2 screens, or parts thereof. Works with the DMP2000, DMP2160, or any other similar printer, but not with the DMP1.

THE NOBLE ORGAN
Turn your computer into a different kind of keyboard – a musical one. OK the CPC is no Fairlight, but the AY-8-912 can sound pretty impressive if you have light enough fingers.

ZX LOADER*
A routine, that will allow you to read in Spectrum binary files. This will *Not* let you play Spectrum games on your CPC, but it is ideal for transferring data and graphics between two otherwise incompatible computers. *July 1986.*

Tape **£7.95**	Disc **£9.95**

Documentation **£4.95**

To order please use the order form on Page 73

Don't fly the flag

THE otherwise well-researched review by Alex Aird of our AtLast Plus database program in the October *ACU* referred to a problem the reviewer had in aligning fields on the printout.

This was in fact due to a simple mistake on the part of the reviewer in that he had inadvertently set a flag in the form design to omit leading and trailing spaces for several of the fields. If he had not done so, the numeric fields that were misaligned would have been correctly right justified.

This flag exists – and is fully documented in the manual – not to trap the unwary, but because there are circumstances where the user may not want fields to be column aligned. For example, when concatenating two character fields that do not fill their allotted space. The default value of the flag is for the field to occupy its full allotted space on the form, with blanks if necessary, and thus preserve column alignment.

I would like to assure any reader who was considering using this program that the apparent problem is no problem at all if you do not alter the above-mentioned flag.

Mike York,
Rational Solutions Ltd.

LD: I have had a few letters this month about Alex's review of AtLast Plus and Masterfile III, all from readers who have been using these programs for some time, defending their choice of database.

Alex's slip just goes to show that the AtLast Plus manual is not as idiot proof as he thinks.

Spaced out

I HAVE serious doubts concerning the claimed accuracy of the Model Universe program in the October issue. For instance, the orbital radii of the gas giants seem wrong. Saturn is too close to Jupiter and too far from Uranus.

At the present time Saturn and Uranus are in Sagittarius in direct line of sight from the Sun. This is not the case with the program. If entry is made at even date but 1978 *[sic]* and runs at one year intervals to 1988, the final positions do not compare to the positions if entry is made at 1988.

C A Watts,
London, E6

LD: I've spoken to the author of the Model Universe, Alastair Scott, about this. He says the orbital radii of the gas giants are correct. Press D for Data if you are not convinced. They look wrong because Pluto has a highly elliptical orbit, so the Jovian and Saturnian orbits had to be squashed considerably to fit them in.

We don't understand the differences you get between the positions at an initial date of 1988 and those obtained by running the orbits forward from 1978. With our copy, doing this and pressing D results in the same values of Radius and Theta to two and four decimal places respectively.

As an extra point, Alastair says there are two things he could do which would make the program even more accurate. One is to solve Kepler's equation by iteration, instead of using



an approximation called "the equation of the centre".

The more significant improvement, however, is to take account of perturbations – the gravitational pulls of each planet on each other. Alastair didn't do this because it would have resulted in readers having to type in about 60 terms of the form *A sin pt + B cos nt*, which would have doubled the program's length for the sake of just a small gain in accuracy.

Code for keeps

I AM studying assembly language and have found the book Assembly Language Programming for the Amstrad CPC 464, 664 and 6128 by A. P. and D. J. Stephenson excellent. But the copy I have is on loan and I have been unable to buy one. I was wondering if any fellow *ACU* readers have a copy they would sell to me.

John Calder,
Edinburgh,
Tel 031-447 1647.

Security break

IN your August issue the Professional Lawnmower Simulator game was not printed correctly. You should have notified the magazine that there was a security break. I typed it in and found when I finished that there was a fault and it would not go past "Please Wait".

I was unable to get into the program and took out line 1010, 3090 and 3100 and got the same problem again. I had to re-type it for the third time, taking out lines 80 to 160, which solved the security break. I find there is still a fault in the program, and I am unable to find it. I found this quite inconvenient, so can you please notify when there is going to be a security break in the program.

Can you please reply with the correction to the program?

Sandy Learmonth,
Wallyford, East Lothian.

LD: You are not well, Sandy. I am sending you a big red hammer. When you feel the urge to type in another listing, you should hit yourself over the head with this big red hammer until the urge goes away.

Don't worry about wearing the big red hammer out, I keep a jumbo box of them by my desk at all times.

Send your letters to:
Lance Davis
Letters Editor
Amstrad Computer User
169 Kings Road, Brentwood
Essex CM14 4EF

Another missing manual

COULD you please tell me where I can get a replacement manual for the 464? Having lent my computer to a friend, the manual must have been sucked into a Black Hole.

Brian Allan,
Saintfield, N. Ireland.

LD: Replacement manuals are available from CPC Ltd on 0772 555034.

Two starry eyed

I ENJOYED reading your October issue. It has been a long time since I last read *ACU*, but my appetite has been whetted again.

Could you please advise me if there are any astronomy programs for the CPC? I have tried different computer shops in Belfast, but to no avail.

Sam Todd,
Belfast.

* * *

AFTER typing in The Model Universe program in October's issue, I was interested to now if you could work out the details for plotting the phases of the moon. Also, are there any astronomy programs on the market that you would recommend?

R Stanley,
Guildford.

LD: The only astronomy program currently available for the CPC is actually the suite of programs from which the Model Universe listing came. Written and marketed by Alastair Scott, it is called Astrosuite III and costs £8 on disc only. Alastair can be contacted at 10/3 Blacket Avenue, Edinburgh, EH9 1RS.

Fascinating Stardodger

THANK you for the interesting series by Stewart Russell. Using no less than three languages on our versatile CPC was a fascinating way of showing the relative virtues of each, and at the same time hopefully making more users aware of

My thing won't spring

HAVING typed in the Spring on a Thing program for the November issue, I find that it runs quite happily for a while, and then breaks down with *Improper argument in 900*.

Using ACU Proofreader, all the proofcodes correspond, and in any case I have checked the whole listing line by line very carefully. I solved the problem of that strange ˆ squiggle in line 210. A nasty one, that was.

Can you help me sort out this problem?

A.N. Awful-Signature,
Seaton, Devon.

LD: I have just played Spring on a Thing through umpteen levels in an attempt to duplicate your improper argument. I can't do it.

The listing contained no misprints. The squiggle you mention is the way printers and typesetting machines print out the up-arrow character, which you'll find on your pound (£) key. It means "to the power". So 2ˆ10 means two to the power 10, which equals 1,024.

I suspect the improper argument you are getting is being caused by the coordinates following a LOCATE statement in line 900 falling outside the legal limit. This means the typing error may not be in line 900, but in a line elsewhere in the program where the variable x%, y%, tx%, ty%, x1%, y1%, tx1% or ty1% precedes an equals sign.

When your program crashes, type in the following line:

```
PRINT x%;y%;tx%;ty%;x1%;y1%;tx1%;ty1%
```

If any of the numbers that appear are below 1 or above 40, then I am right. If they check out, investigate the variable br2%. If it's negative, that would cause an improper argument too.

My guess is you've missed a per cent sign off the end of a variable name somewhere.

some of the excellent software provided for us by Arnor.

I would very much like to see more complete games by Stewart Russell because his clear description of the program is so helpful in improving one's own efforts.

It scores over smaller isolated examples of program techniques because it is part of a *whole* game, even though it may be a simple one. It was the first time I have seen such a clever example of collision detection using TESTR.

Reports of the coming Amstrad CPC boost is good news indeed – it will help all round, and promote new software for our already well-equipped machine.

John Gray,
Eastbourne.

On the knock

I'VE written to you so many times now and you haven't replied to any. Please, you've got to at least read this letter:

Oh, sorry, I don't know what to say now. How about some other time?

Daniel Button,
Preston.

P.S. Knock, knock. Who's there? ACU. ACU who? ACU through the keyhole so let me in!
P.P.S. Any chance of a free game?

LD: You had the whole office groaning with that knock-knock, Dan. Must be worth a free game. Watch your doormat for a copy of Gremlin's Night Raider.

Okimate colour dumps

I WONDER how many CPC users with Okimate 20 printers are happy with life, the universe and, above all, the fact that their printer doesn't work with the dump routines built into commercial graphics packages.

I suspect that users pondering on the wisdom of their Okimate 20 purchase feel like the space trader who, upon travelling across several galaxies, surviving endless duels, becoming eventually "Elite", gets zapped and realises he forgot to save. I was initially this way disposed, but no longer.

Armed with my magazine articles (thanks), Zaks Z80, Laser Genius, the Okimate 20 manual and zero knowledge (would have been easier with zero gravity) I set about things. The result is a menu-driven suite of 16 colour, shaded and mono hi-res dumps, producing pictures in several positions and sizes.

The circles stay circular and, like for like, my dumps use 64 per cent less colour ribbon than those supplied with my printer. Anyone interested can contact me at the address below. Although CPC owners with Okimate 20 printers will be small in number, I hope you will acknowledge their desperate plight by publishing this letter in its entirety.

John Gardiner,
72 Sandford Leaze,
Avening, Tetbury,
Glos GL8 8PB.

Alternative drives

I AM in the market for a second disc drive to go with the DDI-1 I already own. My computer is a 464 upgraded with a 64k ram pack and 40025 chip. The second drive would have to handle at least 400k of disc space, and would be used to store databases in conjunction with the Atlast Plus database program.

Can you recommend other drives that may be suitable as a second drive? If this involves a difference in disc size, can I still format the discs using my CP/M Plus program, which is on 3in disc, controlling the second drive from the first?

N A Elliott,
Bexlet, Kent.

LD: Siren Software (061-228 1831) does a 3.5in second disc drive for the CPC range and KDS Electronics (04853 2076) has a 5.25in second drive for the CPC range. To use either with CP/M Plus you'll need to buy KDS's Ramdos operating system, which will enable you to format a 3.5in or 5.25in disc to 80 tracks, and thus gain the storage space you need.

The scores don't stick

WHAT interesting reviews for Bionic Commando and European 5-a-side in the October issue. Does Colin think these games are so terrible that he doesn't even give them 0/20? He gave the former a staggering □ and the latter an unbelievable □. Wow!

Fazilat Dar,
London SW20.

LD: Ah, you noticed. Shucks. Thought we'd got away with that one. For the record, Bionic Commando scored 17/20 and 5-a-side got 14/20.

Linguistic Arnold

I HAVE developed some Basic programs which deal with accounts and mathematical problems, but would like to be able to speed them up.

I note your reply to John Gimber that for these purposes one should not bother about machine code, and should try Forth, Pascal or C. So what book would you advise me to get – preferably one in print – and how do I set about teaching Arnold? Bookshops seem to have given up stocking books that deal with the CPC.

Pat Paget,
Manchester.

LD: The sort of books you need to learn alternative languages do not have to be CPC specific. What you need is one or two standard C or Pascal text books. The language will come with a guide to how standard or non-standard it is.

The definitive book on C was written by the inventors of the language, Kernighan and Ritchie. It costs £23.95 and is called C Programming Language (Prentice-Hall, ISBN 0-13-110163-3).

For learning Pascal I would recommend Illustrating Pascal by Alcock at £8.95 (Cambridge University Press, ISBN 0-521-33695-3). Another good one is Introduction To Pascal by Zaks at £17.95 (Sybex, ISBN 0- 89588-066-0).

All these books are available mail order from Computer Manuals Ltd, which puts out a very interesting mail order catalogue. Ring and ask them for one on 021-706 6000.

Easy number

HAVING typed in the Proofreader listing, I now find it much easier to type in the other programs. Could you please tell me how the proofcode is arrived at and how I can use Proofreader with



NAVIGATOR

A new dimension in precision joysticks. Total control from its unbreakable precision shaft through to its ergonomically designed grip make reaction speeds a thing of the past.

For use with: All Atari computers (including ST), Commodore (64, 128, VIC20, Amiga), MSX computers, Amstrad CPC computers (no Autofire), Spectrum and Spectrum Plus (with suitable interface), Spectrum +2, Spectrum +3 (no autofire).

£14.99

PREDATOR

A joystick designed to suit the way you use them - with its computer designed base for table top or hand held use. Whether you're left or right handed it's precision grip fits your hand naturally.

For use with: All Atari computers (including ST), Commodore (64, 128, VIC20, Amiga), MSX computers, Amstrad CPC computers (no Autofire), Spectrum and Spectrum Plus (with suitable interface), Spectrum +2, Spectrum +3 (no Autofire).

£12.99





SPEEDKING
With Free Game

The Speedking's unique design established Konix as one of Europe's major joystick designers. Its reliable construction, microswitch efficiency and hand-hugging design puts firepower where you need it - in the palm of your hand.

For use with: Spectrum (16,48 and Plus with suitable interface), Commodore (64 & 128), and all Atari, Amstrad (CPC) and MSX Systems.

£11.99

MEGABLASTER

The joystick that's big on performance and small on cost. It's hand grip fits you perfectly whether you're left or right handed and it performs equally well whether hand held or table top mounted.

For use with: All Atari Computers (Including ST), Commodore (64, 128, VIC 20, Amiga), MSX Computers, Amstrad CPC Computers, Spectrum and Spectrum Plus (with suitable interface).

£6.99



BREAK THROUGH THE PERFORMANCE BARRIER WITH A KONIX JOYSTICK

konix
The fastest reactions in the business



SPEEDKING
With Autofire

The unique Speedking design with the added advantage of Autofire to give you instant and even firepower.

For use with: Spectrum, Spectrum Plus and Spectrum +2, Commodore (64, 128 & VIC20), all Atari (incl. ST) Amiga and MSX systems.
*(Spectrum Plus 2 £14.99)

£12.99

It's hard work, not luck, thats made us one of Europe's leading joystick manufacturers.

We've done it by applying the Konix winning formula to all our products. Sound development, advanced design and fail-safe construction ensure you get the best out of your joystick - time and time again.



SEGA®
Master System

The classic Speedking design with twin firebuttons and microswitched for super-accurate, high speed action. Easily accessible auto-fire with on/off switch gives instant, awesome fire power.

Specifically designed for use on the Sega Master System.®

£12.99



NINTENDO®
Entertainment System

The classic Speedking design with fully microswitched twin firebuttons and instant firepower with easy to use autofire on/off switch. Start and select buttons put software control in the palm of your hand.

Specifically designed for use on the Nintendo Master System.®

£12.99

To: **Konix Products, Unit 35, Rassau Industrial Estate, Ebbw Vale, Gwent, NP3 5SD, U.K.**

Please send me ______ Navigators at £14.99
______ Predators at £12.99
______ Megablasters at £6.99
______ Speedkings with Game at £11.99
______ Speedkings with Autofire at £12.99
______ Spectrum Plus Speedkings with Autofires at £14.99
______ Segas at £12.99
______ Nintendos at £12.99

Make of home computer to be used ______
I enclose Cheque/Postal Order for £ ______ (Prices include p&p)
(made payable to KONIX) or charge my Access/Visa
Credit Card No. ______ Expiry Date ______
Signed ______
Name ______
Address (Block Capitals) ______
______ Post Code ______
Please allow 14 days for delivery. Credit card holders may order on 0495 350101

Unit 35, Rassau Industrial Estate, Ebbw Vale, Gwent, NP3 5SD, U.K. Telephone 0495 350101

other listings that do not show this number?

C Haynes,
Harrow, Middlesex.

LD: The whole idea of Proofreader is to help you type in proofcoded listings from this magazine. Even if I told you how it works, Proofreader is of no use to you unless listings are published with proofcodes. As I said last month in a reply to a similar query, we are considering publishing the proofcodes for earlier listings.

Bottom of the league

I AM looking for a package that would be ideal for a league fixtures secretary who organises a whole league from start to finish.

What I need is a program to create a full fixture list, making sure that no pub or club can be double booked at the same venue. It must also allow me to record each week's results and give me an updated set of league tables.

One other feature I would like, though this is not essential, would be facilities to record each member of each team and to keep an up to date file of personal players' records throughout the season, calculating league individual averages.

Does such a program exist?

Ian Gardner,
Exhall, Warwickshire.

LD: You are asking for something a little too specialised, Ian. The program you need has yet to be written. I have a feeling it's going to be a long wait.

September blues

I UNDERSTAND that the non supply of the September 1987 issue of *ACU* to New Zealand subscribers was caused by the very quick demise of Grandstand, the former distributors. Where the magazines went appears to be unknown, and I note that it is not available as a back order for the UK. Can anyone help me with a copy please?

A. O. Rae,
New Zealand.

LD: The 1987 volume is completely sold out. Any mercenaries out there want to sell Mr Rae their September 1987 issue?

All Greek to Eric

HAVING used Proofreader to checksum a similar routine, how can you check the code it produces at the end of the line? I know there is a way, but I am rather isolated and it is not easy to get help or tips in a foreign land.

Eric Taylor,
Athens, Greece.

LD: Put simply, it is not possible to use ACU Proofreader to check your own Basic programs, nor programs typed in from other magazines. That's why we called it ACU Proofreader.

Soldier blue

WHILE glancing through your letters pages in the November issue I came across a great little letter by M. J. Vale on defining a function key for DEC$, BIN$ and HEX$ conversion.

"Works fine on all CPCs", you say. "Great", says I. So can you please send me the updated version of the 464 – the one with DEC$ on it.

Cpl Rab McCombe,
BFPO.

LD: If you had typed it in you would have found that Mr Vale's listing didn't *use* the DEC$ keyword, it just PRINTed it. This is why it works fine on *all* CPCs. Ner ner ne-ner ner!

A load of garbage

IN order to pre-empt a garbage collection, it is recommended that you put *OPENOUT"dummy":MEMORY HIMEM-1:CLOSEOUT* in programs using strings.

I have always been puzzled how this works with utilities such as Flash Pack and GM Toolkit, reviewed in your November issue. For example, Flash Pack you say installs itself automatically just below HIMEM, unless you relocate it elsewhere. I do not know enough to understand how this would interact with the anti-garbage procedure.

This is rather important to know because Flash Pack includes a string sort, so one would be using it with lots of strings. Any advice would be welcome.

Albert Purbrick,
London SW15.

LD: I don't know what book you got this garbage collection stuff from. Opening out a dummy file and lowering HIMEM simply protects a 2k cassette buffer for reading and writing files.

You see, every time you attempt to open a file Arnold says, "Fine. Give me 2k please". If the program in memory is so large that 2k isn't available Arnold says: "Eeek! I'm out of memory. Sorry, Albert, I can't do any more file handling".

This is a bug on the 464, which was fixed for the 664 and 6128. So what we do is open a file right at the beginning of the program. That lowers HIMEM temporarily by 2k, then we issue a *MEMORY HIMEM-1* to make that 2k buffer permanent.

From this you will gather that your worries about Flash Pack, anti-garbage procedures and string sorts are totally unfounded. Garbage collections are forced in Basic by issuing a *dummy=FRE("")* statement.

Quickshot solution?

IN the November issue John Kimber wrote about problems with keyboard input when his Quickshot II Turbo was plugged in.

I experienced similar problems with my Quickshot II, which I discovered were caused by the autofire switch being in the On position. I have since taped the switch permanently Off and have had no further problems. I suggest Mr Kimber does something similar.

Chris Winchester,
Liverpool.

Word of warning

WHEN I read Rupert Goodwins' review of the Star LC-10 colour printer in the August *ACU*, I experienced a sense of déjà vu. The last time *ACU* reviewed a similar product was in October 1985 when I was young and gullible. I had just bought a 6128. The printer under review was the Okimate 20, which I subsequently bought.

Most of what was said about it in the review was quite true. The problem was that the Okimate 20 never caught on, and I have not managed to use its graphics or colour facilities in any serious way because no one, as far as I know, has written any software which will run on it, aside from the tacky little screen dump routine on cassette supplied with the machine.

I have just finished my last ribbon, and my last spare print head has packed up. X-Data, who supplied the machine, have stopped replying to my letters, so I assume they are now extinct. It looks like the end of the road for my printer, unless any of your readers can prove me wrong.

The moral of this tale for the rest of your readers is: Beware of buying a new make of printer until you have found out what software will run on it, and wait to see if it grows in popularity before buying.

Richard Smith,
Whatton, Notts.

LD: I don't think anybody will argue with the moral of your story, although if everyone waits and waits, the product will of course never become popular. Bit of a paradox, eh? The point about the Star LC-10 is that it makes an excellent normal printer, yet has the ability to go colour for those special occasions.

X-Data is definitely alive and kicking, and still lives on Slough Trading Estate. Try ringing 0753 72331. I did.

Hide and seek

I AM an owner of one of those little black boxes, Multiface II to be exact. I have noticed that many of the newer games seem to check to see if a Multiface is present, and crash the computer if one is found. I have discovered a way around this problem.

Cut the wire in the Multiface II ribbon cable numbered 31 – the IORQ line – and place a switch in it. Before loading the game turn the switch off, once loaded turn it on and use Multiface II as normal. This works on my 6128, and I see no reason why it should not work on any other machine.

K. J. Gray,
Guildford.

Austrian affair

The hills are alive with the sound of hacking, for games you have played for a thousand days



MERRY Pagan Festival, folks. And a happy New Year to our Oz friends who don't get this illustrious tome quite as soon as we do.

I'm not here at the moment – wonderful stuff Time, stops everything from happening at once – I'm really in Austria. Give you lot a break for Christmas. Also Sol, 'Thello and Bruni, who are with Mum-in-law.

Should be lots of snow here at this time of year, while you poor lot just get colder rain, so here's a snowflake program to make you really miffed. Type it in and leave it running while you read the column:

```
1 ' VAX's silly snowflake prog.
2 '
100 r=180:s=5:w=0.5
110 BORDER 0:INK 0,0:INK 1,26:INK 2,23
    :INK 3,20
120 MODE 1
130 ORIGIN 320,200
140 RAD
150 FOR i=-PI TO PI STEP PI/3
160 MOVE 0,0:DRAW SIN(i)*r,COS(I)*r,1
170 NEXT
180 FOR j=s TO r STEP s
190 z=RND*j*w+s:k=INT(RND*3)+1
195 IF k=0 THEN STOP
200 FOR i=-PI TO PI STEP PI/3
210 x=SIN(i)*j:y=COS(i)*j
220 MOVE x,y:DRAWR z*SIN(i+PI/3),z*COS
    (i+PI/3),k
230 MOVE x,y:DRAWR z*SIN(i-PI/3),z*COS
    (i-PI/3),k
240 NEXT
250 NEXT
```

There is a game circulating at the moment which seems to be receiving more attention than any since strip poker, though not for the same reasons. John Girvin of Belfast has hacked the tape version, and good ol' Adam Todd has hacked the disc version. The game? Gothik.

We'll deal with Adam's first, as his letter is a little more emotional. The thing he didn't like, you see, is that even if he survived a little while, he inevitably ended up trapped with no fire bombs to blast his way out. Game over. So now the fire bombs are a little more powerful and don't run out.

The lightning bolts and arrows don't run out either, but he thinks there are enough lives kicking about anyway, so no infinite lives on this one. Look out for the black death near the portals.

John did the cassette hack for Gothik with settable maximum treasure, infinite energy, magic,

```
1 ' Gothik disc hack
2 ' By Adam Todd
3 '
10 MODE 1:tot=0
20 FOR b=&CF TO &FF
30 READ a$:c=VAL("&"+a$)
40 POKE b,c:tot=tot+c:NEXT b
50 IF tot<>&13C9 THEN PRINT"RROR":STOP
60 INPUT "Insert GOTHIK disc and press
   return",d$
70 CALL &EC
80 DATA 7b,d6,df,84,76,27,bb,bb,df,a2
90 DATA 3c,c0,07,41,54,21,cf,00,11,eb
100 DATA 1e,01,0a,00,ed,b0,c3,c1,1c,3a
110 DATA dc,00,ed,5b,c1,1c,21,00,01,4f
120 DATA df,d9,00,21,de,00,22,11,01
```

arrows and fire storms. Also the number of cantrips you can use at the start of the game. Type in the proggykins – except for the pokes you don't want – save it, run it, insert rewound tape, and Robert's yer father's brother.

The ^ symbol in line 80 is typed by pressing the key to the left of CLR with the pound sign on it. On the screen it looks like an up-arrow, on the typesetting machine it sometimes comes out looking like a Frenchie circumflex.

Don't worry about the disappearing energy bar; this is to be expected, and doesn't matter.

John and Adam both sent in other hackettes, and to be fair we'll do this in reverse order to last time. John's pokette is for Uridirum+. It gives infinite lives, invulnerability and removes the homing mines. Hitting a mine will still kill you though. Load as per his Gothik poke:

```
1 ' Uridium+ cheats (tape)
2 ' By John "Hacman" Girvin
3 '
20 MEMORY &3FFF:MODE 1:PEN 1
30 INK 0,0:INK 1,24:BORDER 0
40 addr=&BE00
50 READ byte$
60 IF byte$="uridium" THEN 100
70 POKE addr,VAL("&"+byte$)
80 addr=addr+1
90 GOTO 50
100 LOAD"!loader":POKE &414F,&BE
110 CALL &4000
120 '
130 ' *** DATA STARTS HERE ***
140 '
150 DATA 21,00,40,11,00,01,01,bc
160 DATA 3b,ed,b0,af
170 '
180 ' *** CHEAT DATA ***
190 '
200 ' Infinite lives
210 DATA 32,c2,1f
220 ' Invulnerability
230 DATA 21,44,09,77,23,77,23,77
240 DATA 21,59,09,77,23,77,23,77
250 ' Remove homing mines
260 DATA 21,62,09,77,23,77,23,77
270 '
280 ' *** DO NOT CHANGE ***
290 '
300 DATA c3,18,08,4a,4f,48,4e,20
310 DATA 47,49,52,56,49,4e,20,21
320 DATA uridium
```

```
1 ' Gothik cheats (tape)
2 ' By John "Hacman" Girvin
3 '
10 MEMORY &3DFF:MODE 1:PEN 1
20 INK 0,0:INK 1,24:BORDER 0
30 INPUT"Number of cantrips ";nc
40 IF nc<0 OR nc>5 THEN 30
50 addr=&BE00
60 READ byte$
70 IF byte$="gothik" THEN 120
80 IF byte$="**" THEN POKE addr,2↑nc-1
   :GOTO 100
90 POKE addr,VAL("&"+byte$)
100 addr=addr+1
110 GOTO 60
120 LOAD"!gothik1":CALL &BE20
130 '
140 ' *** DATA STARTS HERE ***
150 '
160 DATA c5,e5,f5,06,f6,ed,78,fe
170 DATA 00,28,06,f1,e1,c1,c3,ff
180 DATA ff,f3,2a,0f,be,22,39,00
190 DATA 21,34,be,22,92,01,18,eb
200 DATA cd,4c,3f,2a,39,00,22,0f
210 DATA be,f3,21,00,be,22,39,00
220 DATA fb,c3,00,3e,21,42,be,11
230 DATA 3d,81,01,1c,00,ed,b0,c3
240 DATA a8,61,3e,80,00,00,00,00
250 '
260 ' *** CHEAT DATA ***
270 '
280 ' Maximum treasure
290 DATA 32,6e,8e
300 ' Infinite energy
310 DATA 32,6f,8e
320 ' Infinite magic power
330 DATA 32,70,8e
340 ' Infinite arrows
350 DATA 32,71,8e
360 ' Infinite firestorms
370 DATA 32,72,8e
380 '
390 ' *** DO NOT CHANGE ***
400 '
410 DATA 3e,**,32,6d,8e,c9,4a,4f
420 DATA 48,4e,20,47,49,52,56,49
430 DATA 4e,20,21,00,00,00,00,00
440 DATA gothik
```

Thanks, John. I'll get the Ed to send you something for your troubles. Anyone else is welcome to send in tapes or discs with your pokes on – especially the longer variety. I'll send 'em back.

Matt Cawley – another tape sender – sent in two pokes, Star Wars and Cauldron II. Now to be honest this is not the first Cauldron II hack we've been sent, but I think I can get away with publishing Star Wars, so here it is:

```
1 ' Star Wars (tape)
2 ' By Matt Cawley
3 '
10 chk=0: FOR addr=&BE00 TO &BE6F
20 READ byte$:byte=VAL("&"+byte$)
30 POKE addr,byte:chk=chk+byte
40 NEXT addr
50 RESTORE 240:READ chk$:IF chk<>VAL("
   &"+chk$) THEN PRINT"DATA error":END
60 CALL &BE00
100 DATA af,06,10,21,3e,be,c5,f5
110 DATA e5,46,48,cd,32,bc,e1,23
120 DATA f1,c1,3c,10,f1,01,00,00
130 DATA cd,38,bc,af,cd,0e,bc,3e
140 DATA 01,cd,6b,bc,06,00,11,40
150 DATA 00,cd,77,bc,21,00,c0,cd
160 DATA 83,bc,cd,7a,bc,06,00,11
170 DATA 40,00,cd,77,bc,21,00,20
180 DATA cd,83,bc,cd,7a,bc,06,00
190 DATA 11,40,00,cd,77,bc,21,00
200 DATA c0,cd,83,bc,cd,7a,bc,af
210 DATA 32,15,64,cd,e6,c1,00,1a
220 DATA c0,cd,83,bc,cd,7a,bc,af
230 DATA 0f,17,1a,18,10,17,00,00
240 DATA 2b26
```

Another item sent in by Matt isn't a hack as such, more of a conspiracy to hack. It's a header reader. She – called Excat and written in machine code – is activated by *CALL &9000*. It's the big listing over the page. A load of status info is shown, and you get asked for a filename.

Unfortunately, Matt saved it at high speed, the beggar, and I couldn't load it in. Had to type it. Wore my pore liddle pinkeys to the bone I did. Kate didn't help much either.

Anyway, Excat will tell you all you never wanted to know about a file but were afraid to ask, and a file type number. They mean the following:

00	Unprotected Basic
01	Protected Basic
02	Binary
16	Ascii
0A	Protext

Yes, yes, Matt – your tapes are all coming back. And Simon will get you something too. Did you hear about Rudolf the brown-nosed reindeer, who couldn't stop as quickly as the rest? OK. OK. I'll go quietly...

My rave fave game at present is Tetris. Go on, laugh then. Seriously, I play the PC version most days in the workshop. Peter Dalton has been hacking away at the CPC version and has found the flattering messages to yours truly that hide within. Something about "The Hairy Hacker ruling OK" or somesuch, but I'm far to modest to mention it. Another piece of text declares that this is the jumpblock-free version specially for Justin. We are both flattered.

Still, on with the pokeykins. This takes yer average Tetris program and makes it work on green screen monitors. Well, not so much work as be visible. As an added bonus you can fiddle it so that it doesn't wind your level up every so often. Yur 'tis:

```
1 ' Tetris hack
2 ' By Peter Dalton
3 '
10 x=0
20 FOR n=&9100 TO &9176
30 READ a$:POKE n,VAL("&"+a$)
40 x=x+VAL("&"+a$):NEXT
50 IF x<>8333 THEN PRINT"Error in code
   ":STOP
60 CALL &9100
70 '
100 DATA 06,00,21,00,40,11,00,40,cd,77
110 DATA bc,21,7f,41,36,8f,21,cc,41,36
120 DATA b3,21,ec,41,36,e3,06,14,21,60
130 DATA 40,36,00,23,10,fb,21,ed,28,36
140 DATA c9,cd,05,40,06,23,21,f8,41,36
150 DATA 00,23,10,fb,06,06,21,42,43,36
160 DATA 00,23,10,fb,06,16,21,0b,43,36
170 DATA 00,23,10,fb,06,04,21,80,44,36
180 DATA 00,23,10,fb,21,56,43,36,c1,23
190 DATA 36,00,23,36,00,cd,ed,41,06,07
200 DATA 21,43,1f,36,1a,23,10,fb,21,13
210 DATA 19,36,c6,23,36,01,cd,00,10
```

```
1 ' Excat 2.0
2 ' By Matt Cawley
3 '
10 addr=&9000:chk=0:ln=100
20 chk=0:FOR count=0 TO 15
30 READ byte$:IF byte$="end" THEN 90
40 byte=VAL("&"+byte$)
50 POKE addr+count,byte:chk=chk+byte
60 NEXT count
70 READ check$:IF VAL("&"+check$)<>chk
   THEN PRINT"Error in line";ln:STOP
80 ln=ln+10:addr=addr+16:GOTO 20
90 CALL &9000
100 DATA 3e,02,cd,0e,bc,3e,01,cd,90,bb
    ,af,cd,96,bb,cd,02,07ca
110 DATA bc,3e,01,cd,6b,bc,3e,01,cd,90
    ,bb,21,71,91,cd,b1,07e7
120 DATA 90,cd,a7,90,3a,f5,91,47,21,e4
    ,91,11,00,80,cd,77,0806
130 DATA bc,22,de,91,26,0d,2e,03,cd,75
    ,bb,21,e4,91,cd,b1,07c2
140 DATA 90,26,0e,2e,04,cd,75,bb,2a,de
    ,91,01,16,00,09,7e,052a
150 DATA cd,54,91,2b,7e,cd,54,91,26,0e
    ,2e,05,cd,75,bb,2a,069b
160 DATA de,91,01,19,00,09,7e,cd,54,91
    ,2b,7e,cd,54,91,26,0643
170 DATA 0e,2e,06,cd,75,bb,2a,de,91,01
    ,1b,00,09,7e,cd,54,059c
180 DATA 91,2b,7e,cd,54,91,26,0d,2e,07
    ,cd,75,bb,2a,de,91,06ea
190 DATA 01,12,00,09,7e,cd,54,91,3e,0a
    ,cd,5a,bb,cd,5a,bb,0658
200 DATA cd,5a,bb,cd,7a,bc,c9,21,f6,91
    ,cd,b1,90,cd,bb,90,0a7c
210 DATA c9,7e,23,fe,ff,c8,cd,5a,bb,18
    ,f6,ed,73,e2,91,cd,0abf
220 DATA 81,bb,21,e4,91,06,00,cd,18,bb
    ,fe,7f,20,14,78,a7,0748
230 DATA 28,0e,3e,08,cd,5a,bb,3e,10,cd
    ,5a,bb,05,2b,18,e7,05bd
240 DATA 18,e5,77,fe,0d,28,0e,4f,78,fe
    ,10,28,f3,79,cd,5a,0745
250 DATA bb,04,23,18,d2,0e,00,11,00,00
    ,21,e4,91,e5,7e,fe,05e2
260 DATA 0d,28,2e,d6,30,38,3b,fe,0a,30
    ,37,f5,21,00,00,3e,049f
270 DATA 0a,06,08,29,cb,7c,20,2a,17,30
    ,05,19,cb,7c,20,22,03c0
280 DATA 10,f1,f1,85,5f,3e,00,8c,57,cb
    ,7a,20,15,e1,23,18,068d
290 DATA cc,cb,79,28,07,21,00,00,a7,ed
    ,52,eb,ed,53,e0,91,07e2
300 DATA 18,06,21,00,00,22,e0,91,ed,7b
    ,e2,91,78,32,f5,91,06dd
310 DATA cd,84,bb,c9,06,02,4f,1f,1f,1f
    ,1f,e6,0f,fe,0a,30,05d5
320 DATA 07,c6,30,cd,5a,bb,18,05,c6,37
    ,cd,5a,bb,79,10,eb,074f
330 DATA c9,45,78,63,61,74,20,76,65,72
    ,20,32,2e,30,20,20,051b
340 DATA a4,31,39,38,38,20,4d,61,74,74
    ,20,43,61,77,6c,65,0540
350 DATA 79,0d,0a,0a,46,69,6c,65,6e,61
    ,6d,65,20,20,20,3a,0455
360 DATA 0d,0a,53,74,61,72,74,20,61,64
    ,64,72,2e,3a,26,0d,047b
370 DATA 0a,4c,65,6e,67,74,68,20,20,20
    ,20,20,3a,26,0d,0a,0383
380 DATA 45,78,65,63,2e,20,61,64,64,72
    ,2e,3a,26,0d,0a,46,0459
390 DATA 69,6c,65,20,74,79,70,65,20,20
    ,3a,0d,0a,ff,00,00,04ac
400 DATA 00,00,00,00,00,00,00,00,00,00
    ,00,00,00,00,00,00,0000
410 DATA 00,00,00,00,ff,00,0d,0a,46,49
    ,4c,45,4e,41,4d,45,0357
420 DATA 3a,20,ff,00,00,00,00,00,00,00
    ,00,00,00,00,00,00,0159
430 DATA end
```

You load up this program, wind your Tetris back to the start and run the poke. Press play and any key, then carry on as normal. With the aid of an old machine code monitor copied out of A. N. Other computing mag, Peter tracked through the eight stages of unscrambling in the loader without having to resort to a magic box. We'll be sending you something pleasant in the mail, and you'll get your tape back.

Now, you Multiface Two fans will be highly delighted with the new Multiface Two Cheat Sheet from Stephen Trimmer's helpline service. He's running a free helpline, and promises more pokes.

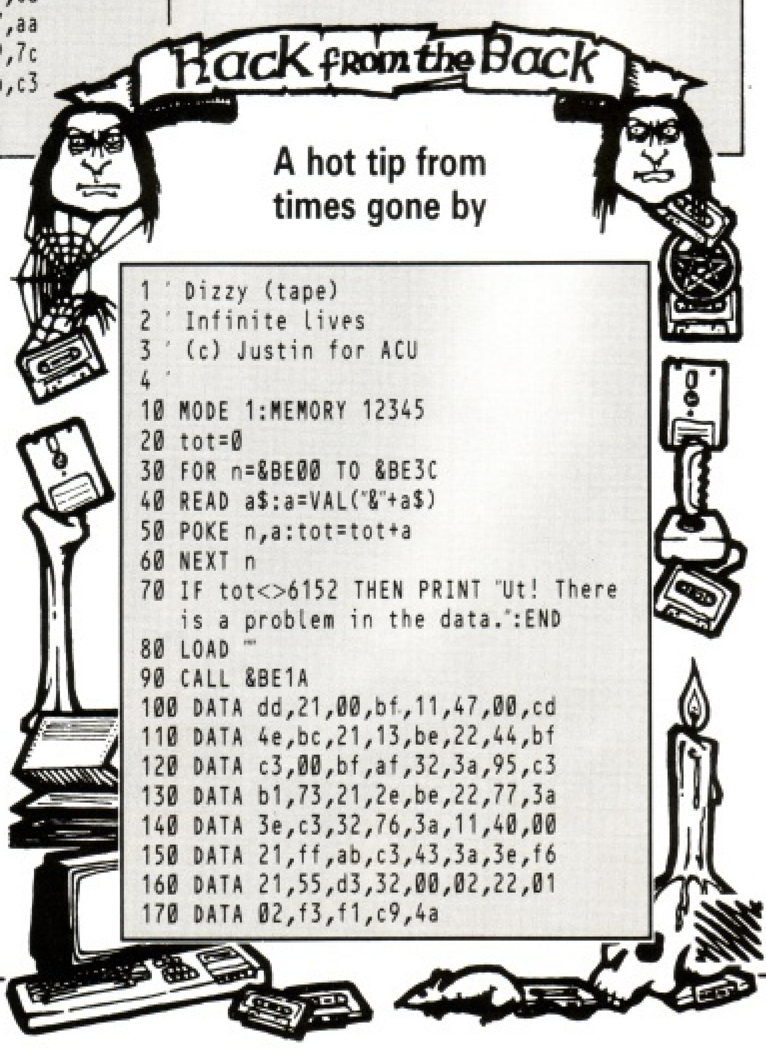
Before I sign off and wish you a Merry Christmas: Did you know that half of Britain's programmers can't spell, and that the remaining two-thirds can't add up? Merry Christmas you lot, from Vax, Suz, Kate, the cats......

```
1 ' Infinite lives for Game Over II
2 ' (c) Justin for ACU
3 '
10 MODE 1
20 tot=0
30 FOR n=&80 TO &BA
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:tot=tot+a
60 NEXT n
70 IF tot<>5722 THEN PRINT "DATA error
   ":END
80 INPUT "Insert disc/press enter",a$
90 CALL &80
100 DATA 21,ba,00,cd,d4,bc,79,22
110 DATA 64,00,32,66,00,21,00,01
120 DATA e5,55,5d,0e,41,df,64,00
130 DATA 21,9f,00,22,0a,02,c9,cd
140 DATA 39,ab,31,00,c0,3a,47,aa
150 DATA fe,01,20,07,af,32,a9,7c
160 DATA c3,49,03,af,32,c3,9b,c3
170 DATA 58,a3,84
```

```
1 ' Infinite lives for Mazie
2 ' (c) Justin for ACU
3 '
10 MODE 0:MEMORY &29F7
20 FOR n=0 TO 15:READ a
30 BORDER 0
40 INK n,a:NEXT n
50 LOAD "!"
60 LOAD "!",&29F8
70 LOAD "!",&37A8
80 LOAD "!",&A178
90 LOAD "!",&7380
100 POKE &8800,0
110 CALL &7380
120 DATA 0,3,26,6,20,13,16,15
130 DATA 24,18,2,14,4,8,17,7
```

Multiface two cheat sheet

Game	Effect	Addr	Poke
ZTB	no badstars	A282	C9
Ghost Hunters	xx = start room	61CA	xx
Freddy Hardest	infinite lives pt1	6675	A7
	infinite lives pt2	8AFA	A7
Starglider	rear view screen	F60E	01
	infinite missiles	6504	00
	infinite proton missiles pt1	F610	01
	infinite proton missiles pt2	64F3	18
	infinite proton missiles pt3	64F4	07
	indestructibility pt1	98C8	00
	indestructibility pt2	98C9	00
	indestructibility pt3	98CA	00
	inductive energy pod pt1	F60F	01
	inductive energy pod pt2	190F	18
	infinite lasers pt1	6336	C3
	infinite lasers pt2	6334	71
Space Harrier	infinite lives	0D74	00
	no collision detection	0D33	C9
	no trees (no dogs neither)	0F64	C9
	aliens don't fire	10FC	C9
	rapid firing	128F	00
Stormbringer	xx = start room (0-34)	16C7	xx



A hot tip from times gone by

```
1 ' Dizzy (tape)
2 ' Infinite lives
3 ' (c) Justin for ACU
4 '
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&BE00 TO &BE3C
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:tot=tot+a
60 NEXT n
70 IF tot<>6152 THEN PRINT "Ut! There
   is a problem in the data.":END
80 LOAD ""
90 CALL &BE1A
100 DATA dd,21,00,bf,11,47,00,cd
110 DATA 4e,bc,21,13,be,22,44,bf
120 DATA c3,00,bf,af,32,3a,95,c3
130 DATA b1,73,21,2e,be,22,77,3a
140 DATA 3e,c3,32,76,3a,11,40,00
150 DATA 21,ff,ab,c3,43,3a,3e,f6
160 DATA 21,55,d3,32,00,02,22,01
170 DATA 02,f3,f1,c9,4a
```

BrunWord

"BrunWord offers considerable flexibility . . . excellent spelling checker . . . very easy to use datafile" – CWTA
"BrunWord is a very competent programme" – AMTIX
"Real value for money . . . user friendly and fast" – Amstrad Action

Buying a word processor is not easy and this is made even more difficult if you already have one that is not suitable. So often, the owner of a new Amstrad rushes out and buys a simple word processor when what he is really looking for is one that is easy to use.

In programming terms this represents a major challenge. Complexity and ease of use are normally far apart but there is a compromise. Take the find and replace routine. BrunWord only allows the case of the replacing word or phrase to be specified and even then will copy the case of the first letter from the original. This is what is wanted 99% of the time. Protext has all the options except this one, so usually requires two attempts to achieve what BrunWord does without asking.

The whole purpose of using a word processor is to make life easier. In simple terms, it must do all that the typist wants but without being a pain to use. This means to us that a compromise is in order and what we have tried to do is illustrated in the find and replace routine. BrunWord does not have the most facilities. We have deliberately removed all the odds and ends that are not normally used but have included a spelling checker and card filing programme as standard features.

Speed of operation is also very important. 14 seconds after typing RUN "BRUNWORD", the word processor, spelling checker and 30,000 word dictionary are all in the memory ready for immediate use.

The convenience of this just cannot be appreciated until it is used. Imagine, you are typing an article and cannot spell "necessary". Your best try is NECXSRY. All you do is put the cursor on the word, press the <F3> key and then press H for help. Half a second later the correct word is displayed on the screen. Press T for Transfer and the word is corrected and you continue typing. No other CPC word processor can test and correct a spelling error in this way.

BrunWord is fast in everything it does. We have simulated typing into BrunWord at 218 words per minute which is faster than the word record. There is no noticeable delay in response and the programme is only ambling along at this speed.

Many word processors use a simple method of justifying text that either makes the middle bulge or makes the text lopsided. BrunWord has a superb system where spaces are first added after punctuation and then between words alternating left and right towards the centre of the line. This gives the text a balanced pleasing appearance.

Good printer control is also important. BrunWord will operate correctly with any printer and has 38 printer control characters that can be embedded in the text. The 18 standard characters each send 3 codes to the printer while the 20 special characters each send 10 codes to the printer. All these can be used without upsetting the justification and with only one space added.

BrunWord always displays the true print format with the page boundaries clearly shown with ..P....P... across the screen.

Another unique feature of BrunWord is its memory filing system. When making severe changes it is often necessary to save sections of text for use later or for adding to another file. Normally, these would be saved back to the disc with the difficulty of using a name that makes the content obvious and resulting in the disc becoming congested with small files.

We do not claim to have totally solved this problem but BrunWord does allow a number of files to be stored in memory so that immediate access is possible. The great advantage is that these can be saved to the real disc along with the main file (under the same name) or left in the memory for adding to another main file.

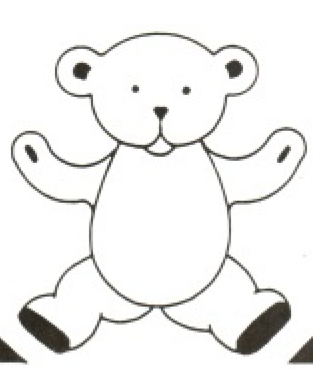
Getting started in BrunWord couldn't be easier. On the disc is a TUTOR which we ask you to work through before opening the manual. The idea is to get the newcomer straight into word processing and feeling like a BrunWord expert. It takes about 20 minutes to run through the tutor, seeing the fast formatting, centring a line and a paragraph, changing margins, insetting a paragraph and so on. And then finally correcting the five deliberate spelling errors. After that we expect you to feel confident to go it alone with an occasional reference to the 40 page manual.

The text of this leaflet was printed directly from BrunWord using an Epson RX80 printer and Qualitas.

How They Compare

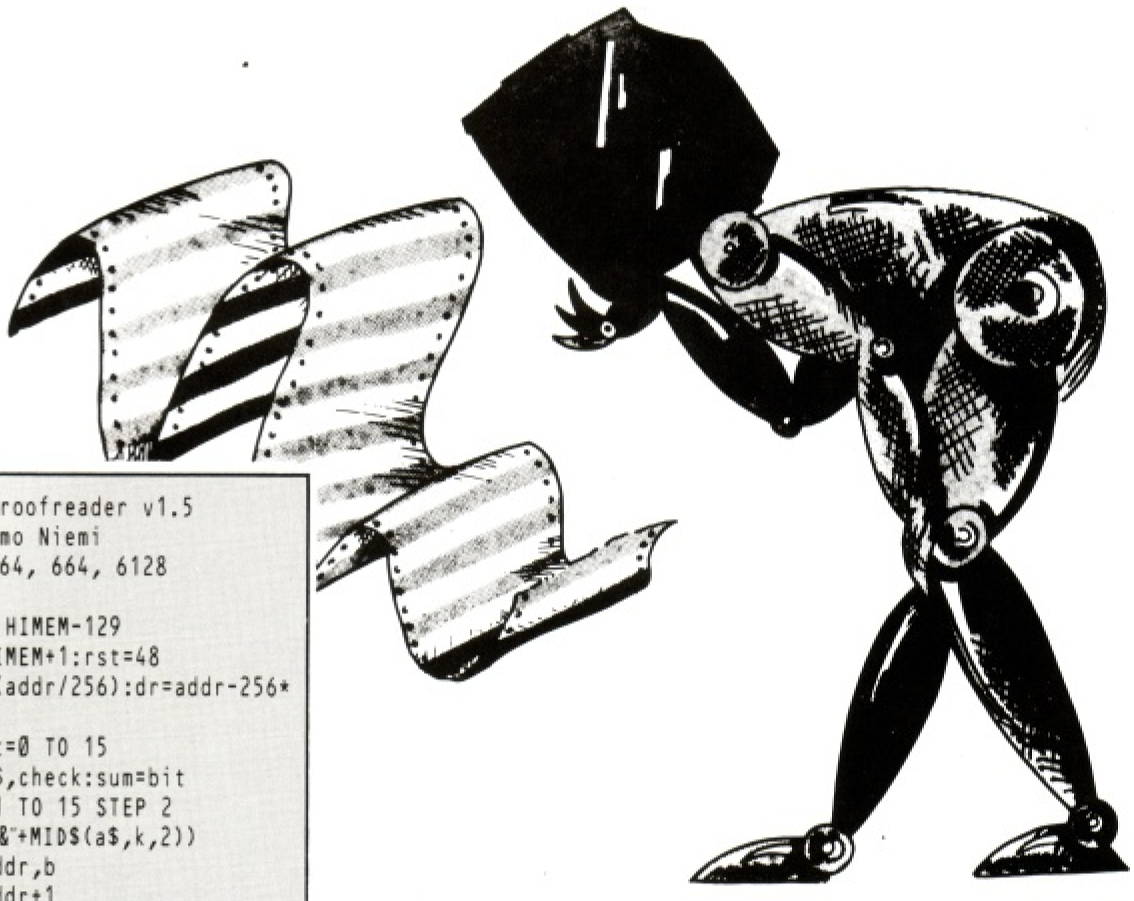
	BrunWord 6128 & BrunSpell	Protext Disc & Prospell	Tasword 6128 & Taspell
Typing into 241 word paragraph. Typing at start of 22k of text.	>218 w/m >218 w/m	>218 w/m >218 w/m	16 w/m 150 w/m
Scroll to end, line by line. Fast scroll to end.	1 min 27 sec 8 sec	2 min 2 sec 8 sec	2 min 25 sec 20 sec
Justify paragraph of 241 words. Justify whole 22k of text. Justify and preview whole text.	1 sec 1 min 2 sec 1 min 2 sec	<1 sec 11 sec not possible	34 sec not possible not possible
Change appearance to format, and Appearance to Format.	17 sec	17 sec	53 sec
Loading 22K file. Saving 22k file. File size on disc. Margins and TABs saved with file. Printer setup saved with file.	10 sec 14 sec 21 K yes yes	7 sec 11 sec 22 K yes no	29 sec 29 sec 22 K no no
Spelling Check 3366 words. Average speed. Disc changes.	52 sec 3883 w/m None	6 min 24 sec 526 w/m 8	18 min 46 sec 179 w/m 3
Test word at cursor, in 22K file.	<1 sec	not possible	not possible
Text space word processor only. Text space with spelling checker.	24067 chars 24067 chars	23300 chars 10579 chars	65276 chars 65276 chars
Screen Format - columns. Page boundaries	40, 80 or 128 shown	40 or 80 not shown	80 only not shown

Send cheque/postal order/Access number to:



BrunWord 464/6128 with BrunSpell & DataFile. £25.00
Info-Script 6128 with BrunWord & BrunSpell . £36.00
with backup copy and Disc Utilities . £46.00
Qualitas with BrunWord 6128 loader £14.95
(All supplied on 3in Disc - state which machine)

Brunning Software
34 Helston Road,
Chelmsford, Essex, CM1 5JF
Telephone (0245) 252854 (24 Hours)



```
[A1] 100 ' ACU Proofreader v1.5
[A3] 110 ' By Aimo Niemi
[A5] 120 ' CPC 464, 664, 6128
[A7] 130 '
[D6] 140 MEMORY HIMEM-129
[AC] 150 addr=HIMEM+1:rst=48
[80] 160 ad=INT(addr/256):dr=addr-256*
     ad
[B6] 170 FOR bit=0 TO 15
[AD] 180 READ a$,check:sum=bit
[06] 190 FOR k=1 TO 15 STEP 2
[ED] 200 b=VAL("&"+MID$(a$,k,2))
[59] 210 POKE addr,b
[1D] 220 addr=addr+1
[5E] 230 sum=(sum+k*b)MOD &FF
[36] 240 NEXT
[F3] 250 PRINT "Line";460+10*bit;
[B3] 260 IF sum<>check THEN PRINT"Chec
     ksum error.":STOP ELSE PRINT"Ok."
[3C] 270 NEXT
[B2] 280 '
[23] 290 pr=&BD2B 'printer address
[C8] 300 sc=&BB5A 'screen address
[8A] 310 REM sc=pr 'Add this line when
      using LIST#8. Observe, however,
     that the proofcodes may be lost i
     f the printer buffer happens to b
     e full.
[A7] 320 '
[18] 330 FOR i=0 TO 2
[C7] 340 POKE rst+i,PEEK(sc+i)
[39] 350 NEXT
[D2] 360 POKE sc,&C3
[74] 370 POKE sc+1,dr
[76] 380 POKE sc+2,ad
[01] 390 IF PEEK(6)=&80 THEN POKE HIME
     M+10,&A4
[A4] 400 '
[0E] 410 POKE HIMEM+7,&20
[9B] 420 PRINT "Proofcodes to ";
[9E] 430 IF sc=pr THEN PRINT "printer
     "; ELSE PRINT "screen ";
[9E] 440 PRINT "are on.":END
[AE] 450 '
[C5] 460 DATA e5f5c5d5fe0d203a,15
[D2] 470 DATA 218aac5faf47577e,210
[07] 480 DATA fe30382efe3a302a,80
[75] 490 DATA 7ef600202ebb2028,243
[FB] 500 DATA 3e20f73e5bf77a07,173
[31] 510 DATA 070707e60ff630fe,28
[49] 520 DATA 3a3802c607f77a1c,39
[E3] 530 DATA cb4320ef3e5df73e,61
[CC] 540 DATA 12f7d1c1f1e1f7c9,8
[1E] 550 DATA 2b3e27bb2004fe20,246
[E4] 560 DATA 282804fe27f52007,180
[0C] 570 DATA 3e20bb200daf5ff6,135
[E0] 580 DATA 20f5afbb2003f1af,117
[04] 590 DATA f5f15f0e007a8357,39
[CD] 600 DATA 0c79b820f8f12002,232
[51] 610 DATA 1e0023189b000000,253
[AA] 620 '
[AC] 630 ' poke himem+7,&20 = on
[AE] 640 ' poke himem+7,&18 = off
```

Proofreader

Lance Davis gets it right with this upgrade of the interactive listing checksum program for the CPC by Aimo Niemi

AIMO Niemi sent us Proofreader from Finland quite a while ago. We were immediately impressed, but said nothing. First we wanted to give it a rigorous test over a number of some months. Apart from one or two minor grumbles, Proofreader was acclaimed by our human guinea pigs as a major breakthrough in magazine-to-reader relations. We made the requested changes and ACU Proofreader is the result.

New readers should note that ACU Proofreader works differently from any other listing checker you may have come across. It uses clever machine code to display a two-figure proofcode enclosed in square brackets every time it encounters a carriage return at the end of a line of Basic.

This innovative approach to the problem means that you can check an ACU listing line by line as you type it in. Alternatively, you can tap a listing in, run ACU Proofreader, and LIST the program to screen or LIST#8 to printer. A proofcode will appear on the end of every line.

We publish the proofcodes at the beginning of the line for two reasons. Firstly because it makes the listings that much easier to read, and secondly to stop sleepy typists from typing the proofcodes in as part of the program. Our tests have proved it works better this way. But remember that *your* proofcode will appear at the *end* of the line.

ACU Proofreader has proofread itself, but these proofcodes obviously will not be of much use to you when first typing in the program. They are used here to show you what they will look like in future ACU listings, and so you have something to test ACU Proofreader on when you've got it running.

There are a few things to watch out for when using ACU Proofreader:

- Always run the program from a clean machine. Switch your CPC off, then on again, then load and run ACU Proofreader before loading in a partly-typed listing or typing in a fresh one.
- Save two versions of the program, "PR.SCR" (codes to the screen) and "PR.PTR" (codes to the printer), with line 310 set accordingly.
- ACU Proofreader now works with a 464 and a printer. I don't know why it didn't work before. If anyone knows the answer to that one please do write and tell me.
- When using Proofreader in interactive mode always use the codes-to-the-screen version. The codes-to-the-printer version should be reserved for hardcopies of completed listings.
- The proofcode is not part of the listing – it cannot and will not be saved by any SAVE command. It is purely a visual aid.
- ACU Proofreader will only work with proofcoded listings found in this magazine. It cannot be used to check your own Basic programs, nor type-ins from other magazines.

Like a lamb to slaughter

ROWS of Operation Wolf machines sporting the Israeli designed Uzi machine gun line the arcades. And while every software house claims that its title will be number one this Christmas, it is Ocean which has the most convincing argument. David Ward, the boss of Ocean, says: "I can't think of one game that has been a success in the arcade, which hasn't been a hit when converted to home computer formats".

He puts this down to the game design. "While it might not be the same people who play the games in the arcade – you need to be over 18 to go into anywhere that has a fruit machine – whatever makes a game an arcade hit also makes it playable in the home."

Ocean's unpretentious offices are split. The sales and marketing people get desks in plasterboard-and-glass cubicles from which to plan the domination of the home computer market. And they do dominate it, not just in the UK – the offices are bedecked with posters for Ocean products in Spanish, French and German, along with a map of the world which has the words Atlantic, Indian, Pacific picked out with the Ocean company logo.

The programmers are kept in the basement behind a combination lock. They can get out, but visitors can't get in to annoy them. The offices down under are much more exciting, brick arches with benches creaking under the weight of high tech hardware, everything from Atari STs with hard discs to Spectrums with micro drives. Guess which one gets used? No, the ST is the machine Ocean uses for all conversions.

At the back of the basement is the arcade. This houses, built into special cabinets, all the machines Ocean is converting. Next to the Operation Wolf is a WEC Le Mans – have you ever tried playing a driving game with sliders for the steering and pedal? It isn't much fun. And there's Robocop, the only Robocop machine outside Japan.

The programmers in-house at Ocean are kept in line by the red-headed Lorraine. "By doing most of the work in-house we can keep closer control than companies which contract work out," she claims.

While Ocean does contract out some work, it is the skill of the programmers in the basement of 6 Central Street, Manchester which has ensured that Operation Wolf will be as much fun in your bedroom as it was in the arcade.

It casts you as a mercenary hero who has to rescue hostages from an enemy camp. This means shooting a lot of men who are not too keen on you entering the base with blazing barrels. They are backed up by armoured cars and helicopters.

The politics get a bit confused with Russian choppers and US tanks. The game gives the impression

IVAN'S WAR TACTICS

- The biggest mistake people make is wasting grenades on tanks – they only need to be shot five times – while helicopters, which need to be hit 10 times, do a lot more damage.
- As a rule, the nearer a man is to the front of the screen the more dangerous he is.
- Watch out for bonuses, particularly the bottle marked P which restores your strength, and the better machine gun which is quite rare and gives a higher rate of fire without using up your stock of bullets.



A chopper meets its maker



Boats are more of a threat than the paras



Operation Wolf is Taito's biggest hit since Space Invaders. Simon Rockman went to Manchester to man the machine guns

of being set in the jungle, so perhaps the country you are fighting has had a few changes of government and suppliers.

The program has been coded by Andrew Deakin, with graphics by Ivan Horn and music by Jonathan Dunn. The result is closer to the coin guzzler than anyone would have thought possible.

There are two versions of the arcade machine, one of which is only available in Japan. This version allows the player to start on any level. But because most players will have seen the European version, which progresses from level to level, it is this that the boys have produced for the CPC. Operation Wolf is the first thing Ivan and Andrew have done for the Amstrad, the previous project being Spectrum Combat School.

Op Wolf uses two 10k screens, double buffered – drawing on a hidden "screen" and then flipping it on to the real screen for fast, smooth action. With a well chosen Mode 0 palette it looks great. All the graphics and code are produced using the Ocean ST-based development system.

An excellent graphics package by John Brandwood (Gryzor, Renegade) makes neat animated sprites more a matter of artistic ability and less one of luck. You need all the help you can get squeezing a jungle into less than 160 pixels.

● Having a grenade thrown at you is exceptionally nasty. Try to take out the bomb-throwing men before they have a chance to lob a weapon in your direction. You cannot learn a pattern, so keep a sharp eye out for sneak attacks.

● The second most dangerous man is the knife thrower. The helicopters and equally vicious boats come next. Fourth on the list is the tank, then comes the big man with the flak jacket, the parachutist and finally the small man.

Into battle

You start in the communications area. I suppose this is to stop the camp calling for help. Take out the attacking soldiers, helicopters and armoured cars without killing the stretcher-bearing nurses.

If you succeed here, a foray into the jungle is called for. The trees mean you are safe from an air attack, but the river is patrolled by motor launches. Take them out before the guns get you in their sights. There are civilians to worry about; the boy wearing a baseball cap should not be shot.

Your next battle takes place in the village. No torching the roofs – stick to your machine gun. Finish the level and you are rewarded with a top-up for your energy. You'll need it, as things are about to get tougher.

Next stop, the munitions dump. The hardest enemy of all makes his first appearance here. Because of his bullet-proof jacket you must hit him in the head. No amount of blasting at his chest will do any good.

Feel free to loose off a couple of grenades because your magazine is replenished at the end of this level. The biggest sprite in the game is used to show the corpse tumbling backwards – it is 18 pixels wide by 48 pixels deep.

The fifth location is your raison d'etre for the mission – the enemy camp. The more hostages you rescue, the higher your score. Things start to get really busy, but not quite as hectic as on the last screen. An American 310 transport plane has landed to ferry the POWs to safety. Get as many as possible into the lowered rear door while the plane taxis on the tarmac.

Operation Wolf may have been Andrew, Ivan and Jonathan's first CPC program, but it is a programming success. They have built on this, and next in line is Rambo III, a three tier game in the mold of Firebird's Savage. There is an Eagle's NestcumGauntlet type level which looks great in Mode 1, a level like Space Harrier, and finally a level which looks a lot like Operation Wolf.

The majority of Rambo III has been designed by Ocean's most avid game player, Gary Bracey, so it is bound to be utterly halibut, but only if you are a master of rapid fire – Operation Wolf is perfect practice.

● *Commando outfit supplied by Counterattack, 38 Viaduct Road, Chelmsford*



Don't waste grenades on tanks



Kill him or die

Basic tutor

An easy bug to catch

Jeff Walker shows you how preventive programming can speed up the coding process

THERE comes a time in every programmer's life when he has to stop acting like a prima donna and admit that his 38k Basic baby contains a few programming mistakes. The old excuse that goes "Ah yes, I know about that one" begins to wear a bit thin, and the new excuse that the infinite loop is an anti-pirate device loses something in the telling.

There are programming mistakes in Arnold's operating system. More if you have a 464, but the 664 and 6128 have one or two as well. Fortunately none of them is serious, unlike those in the 16 bit machines the adverts keep telling us we should be buying. There's a lot to be said for tried-and-tested technology. (Z80 rules, OK).

In computer jargon programming mistakes are called *bugs*. Looking for and fixing bugs is called *debugging*.

The word bug was coined in 1945 by an American mathematician and pioneer programmer named Grace Murray Hopper. Grace was a US naval officer whose job as a troubleshooter on the US Navy's Harvard Mark I computer – one of the old, clattering wall-to-wall jobs – was just a stepping stone on the road to developing compilers and programming aids for Univac, the first computer in the world to be built and sold in significant quantities.

Anyway, one summer day in 1945 the US Navy had to shut the Harvard Mark I down because it wasn't doing what it was supposed to do. Programmers dived into the huge machine and emerged some time later holding the remains of a moth that had somehow found its way into the maze of circuitry – into Relay #70 Panel F, to be precise.

They taped the moth into the Mark I's logbook with an accompanying note recording the "first actual case of a bug being found". From then on, whenever the boss man came into the computer room and caught the programmers with their heads up, they told him they were "debugging" the computer. The term stuck.

Paper programs

Bugs fall into two categories, *syntax* bugs, which are mistakes made with the "grammar" rules of Basic, and *semantic* bugs, which are mistakes in the "meaning" of the program.

Syntax bugs are the easiest to cure because Locomotive Basic diagnoses them for us. Error messages like *Syntax error, Improper argument, Operand missing* and a host of others are the external symptoms of syntax bugs. The listing this month is a sort of "expert system" on Basic's error messages. We'll take a closer look at it before I sign off.

First I want to introduce you to another computing term, *Antibugging*, which means programming in a way that helps avoid making bugs in the first place.

The first rule of antibugging is to do it all on paper first. The quickest way to write a *buggy* program is to program at the keyboard. When I write programs I start off in pseudo-language, a very simple language very much like written English.

Take a look at Figure I. From those 11 lines a shoot-'em-up was born. I'm not going to show you the finished program because it was the first game I ever wrote. Never show anybody your first game. Not even your mum. Anyway, the finished game is beside the point. What's important here is the next step on from Figure I.

Look at the first line, *gosub initialise variables*, then look at Figure II. I've left a lot out because the details aren't important. The important bit of Figure II is line 3, *gosub define meanie UDGs*. This subroutine is the next thing to write in our pseudo language, shown in Figure III, where the first line is another *gosub*. So off we go to design that subroutine (Figure IV).

Now you may think that it is difficult to keep track of where we are in the design process with all these subroutines, but it's not.

The way to keep track is to start on the first page of an exercise book and write subroutine under subroutine, page by page, as you design them, giving each subroutine a title and making a note of which subroutine "called" it (in my figures, the subroutine following RET:).

Put a tick next to the line you're up to in any subroutine, then all you have to do is backtrack as you finish each "path" through the program.

We were up to the UDG (User Defined Graphics) bit, so our pseudo-program would have ticks next to line 1 in Figure I, lines 1, 2 and 3 in Figure II, line 1 in Figure III, plus all the lines in Figure IV. There are no *gosubs* in Figure IV, so where do we go from here? We backtrack to line 2 in Figure III, where, because there are no more *gosubs*, we can tick the rest of the lines and backtrack again to line 4 in Figure II.

Assuming there are no more *gosubs* in Figure II, we can tick the remaining lines in that subroutine and backtrack to line 2 in the main program loop (Figure I), where we find *gosub draw screen*. Off we go again...

At the end of the day/week/month/year (delete as applicable) we end up with an exercise book or

```
MAIN PROGRAM LOOP
 1. gosub initialise variables
 2. gosub draw screen
 3. gosub put meanies on screen
 4. gosub put player on screen
 5. while not bombed
 6. gosub meanies s/r
 7. gosub player s/r
 8. wend
 9. gosub go bang
10. gosub any lives left?
11. if yes goto 3 else game over
```

Figure I: The basis of a shoot 'em up in pseudo-language.

```
S/R: INITIALISE VARIABLES
RET: main program loop

 1. lives = 3
 2. dim meanies(15)
 3. gosub define meanie UDGs
 4. rocks = 5
 5. treasures = 100
      :
      :
22. return
```

Figure II: The "initialise variables" subroutine.

```
S/R: DEFINE UDGs
RET: initialise variables

 1. gosub symbol statements
 2. meanie$(1) = chr$(xxx)
 3. meanie$(2) = chr$(xxx)
      :
      :
16. meanie$(15) = chr$(xxx)
17. return
```

Figure III: The "define UDGs" subroutine.

```
S/R: SYMBOL STATEMENTS
RET: define udgs

1. symbol after xxx
2. fifteen symbol statements
3. return
```

Figure IV: The "symbol statements" subroutine.



three full of pseudo-language. Now we sit down and follow it through. And it's at this stage in the program design process that we find ourselves saying "Oops, I forgot about that" and pencilling in more subroutines. We are finding and correcting bugs before laying a single finger on the keyboard.

When we're happy with what we've got, we can start coding the program. At this stage we have two choices. Do we start at the rear of our exercise book(s) and code backwards, called *bottom-up* programming, or do we start at the front and work forwards, called *top-down* programming?

The choice is up to you, both have their merits and pitfalls, but the important thing is that you stick to the order of things. It's called *structured* programming. Don't go diving into your exercise book coding subroutines here and subroutines there, no matter what the temptation.

Three more rules:

- If it isn't broken, don't fix it
- Don't make random changes
- If you don't understand a bug, write a short program – no longer than 10 lines – that tests the point in question.

That's the theory, and like most things, it takes a little practice to get perfect. But the satisfaction of getting good results first time is well worth the money spent on paper, pencils and –very important – a big eraser.

The listing

OK, now some words on the listing. The idea of Basic Bugbuster is to help you during the coding process. It catches and reports on syntax bugs. You should type it in carefully and save it with the filename BB. Then, as you complete sections of your program, you should merge in Basic Bugbuster before running your code.

It's a simple process. Save your code and then, with it still in memory, insert your tape or disc with Bugbuster on and type: MERGE"bb". Then RUN. 464 owners should remember the MERGE bug in their operating systems which only lets them merge programs saved in Ascii mode, using SAVE"filename",A.

Make sure the line numbers in your code fall between 2 and 59999. Line 3 in the listing is only there to show you what Basic Bugbuster does. The program doesn't cater for disc errors – 664 and 6128 owners can add that themselves if they like, using their DERR keyword. The error explanations are a little brief in places, feel free to customise Basic Bugbuster to your own spec. To add words to any particular explanation, simply add DATA statements between my last one and the DATA statement with three asterisks in it. Or replace my explanations, which are based on those in the manual, with your own. The asterisks mark the end of the text that gets displayed when that error occurs.

And that's it. The end. If you've followed Basic Tutor over all or part of the past 14 months, thank you for reading me. Thank you also to everyone who has written with their troubles, my apologies if I haven't got around to answering you yet. I will. Probably.

Tarra.

● *Next month Ian Sharpe's CPC Programmer's Surgery opens for business. If you have a programming question you would like Ian to answer – be it for Basic, machine code or any other computer language – write to him at Programmer's Surgery, Amstrad Computer User, 169 Kings Road, Brentwood, CM14 4EF.*

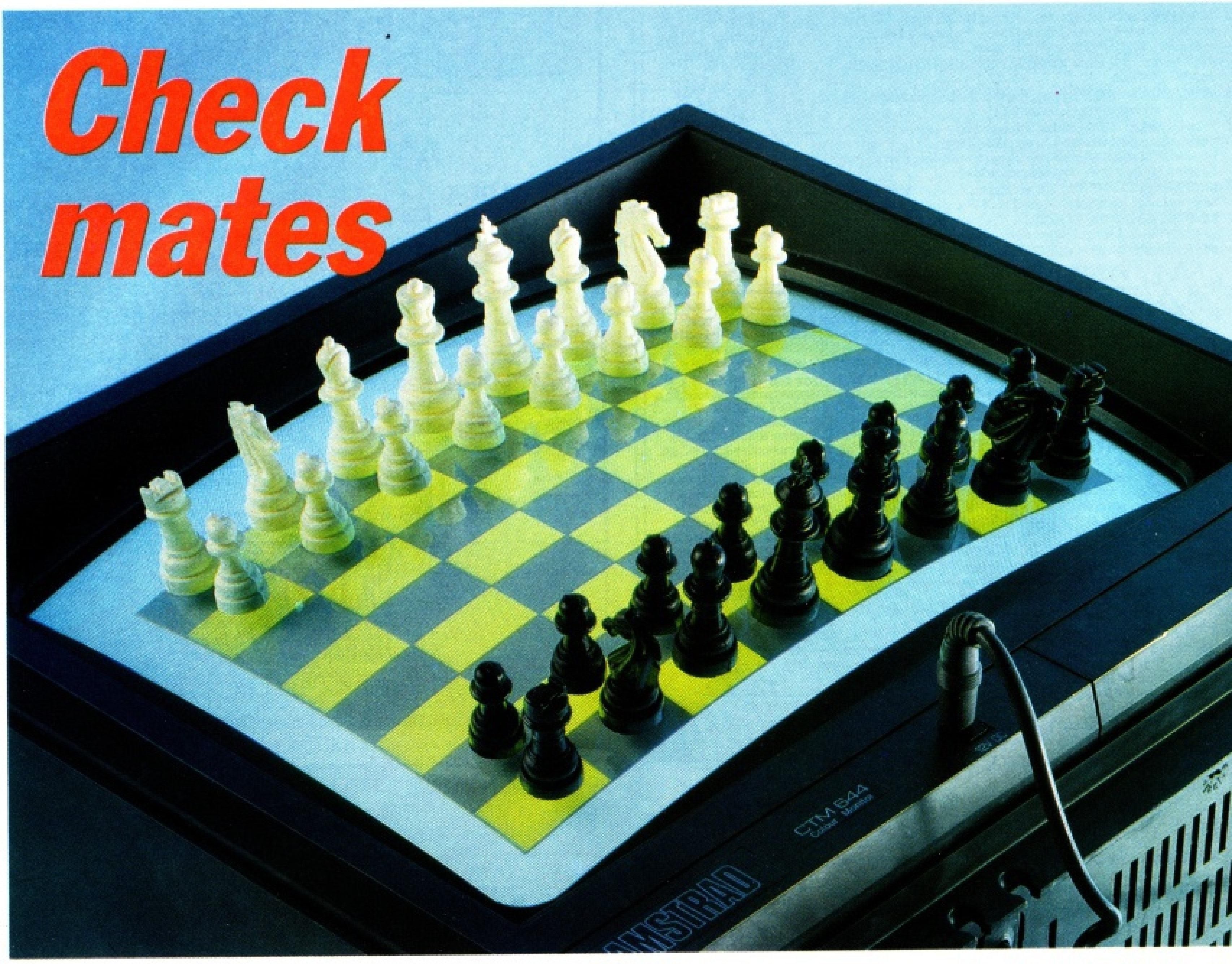
```
1 ON ERROR GOTO 60010
2 '
3 FOR weewee = trip TO toilet
4 '
60000 END
60010 CALL &BC02:CALL &BB4E:MODE 2:INK
      1,26
60020 ON ERR GOTO 60040,60100,60180,60
      240,60300,60350,60440,60530,6058
      0,60650,60710,61590,60770,60830,
      60880,60940,61590,61020,61590,61
      590,61590,61060,61110,61150,6120
      0,61240,61280,61330,61380,61420,
      61480,61480
60030 '
60040 RESTORE 60050:GOSUB 61520:END
60050 DATA "A NEXT command has been en
      countered while not in a"
60060 DATA "FOR loop, or the control v
      ariable in the NEXT does not mat
      ch"
60070 DATA "that in the FOR command."
60080 DATA ***
60090 '
60100 RESTORE 60110:GOSUB 61520:END
60110 DATA "Basic is getting confused
      because something within the"
60120 DATA "line displayed below is no
      t legal. Look for a typing error
       or,"
60130 DATA "if the line is a DATA stat
      ement, it means a READ command i
      s"
60140 DATA "trying to read the string
      data in the line displayed below
      "

60150 DATA "into a numeric variable.""
60160 DATA ***
60170 '
60180 RESTORE 60190:GOSUB 61520:END
6019 REn     dn" DATA "subroutine. Thi
      s error is commonly caused by a
      missing END at"
60210 DATA "the end of the main progra
      m loop."
60220 DATA ***
60230 '
60240 REST50SUB 61520:END
60250 DATA "A READ command has tried t
      o read yond the end of"
60260 DATA "the last DATA statement. Y
      ou will have to check all the"
60270 DATA "DATA statements in the pro
      gram."
60280 ***
60290 '
60300 RESTORE 60310:GOSUB 61520:END
60310 DATA "The value of a function's
      argument, or a command parameter
      ,"
60320 DATA "is invalid in some way."
60330 DATA ***
60340 '
```

```
60350 RESTORE 60360:GOSUB 61520:END
60360 DATA "The result of an arithmeti
      c operation has overflowed."
60370 DATA "This may be a floating poi
      nt overflow, in which case some"
60380 DATA "operation has resulted in
      a value greater than about 1.7e^
      38."
60390 DATA "Alternatively, the overflo
      w could have been caused as the"
60400 DATA "result of a failed attempt
       to change a floating point numb
      er"
60410 DATA "into a 16 bit signed integ
      er."
60420 DATA ***
60430 '
60440 RESTORE 60450:GOSUB 61520:END
60450 DATA "The computer has run out o
      f free memory. It could be"
60460 DATA "that the variables have be
      come too big, or that the contro
      l"
60470 DATA "structure (GOSUBs, WHILEs,
       FORs) is too deeply nested."
60480 DATA "A MEMORY command will give
       this error if an attempt is mad
      e"
60490 DATA "to set the top of Basic's
      memory too low, or to an impossi
      bly"
60500 DATA "high value."
60510 DATA ***
60520 '
60530 RESTORE 60540:GOSUB 61520:END
60540 DATA "Basic cannot find the line
       it is"
60550 DATA "being asked to GOTO or GOS
      UB."
60560 DATA ***
60570 '
60580 RESTORE 60590:GOSUB 61520:END
60590 DATA "One of the subscripts in a
      n array reference (the bit"
60600 DATA "in between the brackets) i
      s too big or too small. It could
       be"
60610 DATA "that you have forgotten to
       DIMension the array, or that yo
      u"
60620 DATA "have mis-typed the variabl
      e name."
60630 DATA ***
60640 '
60650 RESTORE 60660:GOSUB 61520:END
60660 DATA "Basic has found an array i
      n a DIM statement that has"
60670 DATA "already been DIMensioned.
      You need to use the ERASE comman
      d"
60680 DATA "before an array can be re-
      DIMensioned."
60690 DATA ***
60700 '
60710 RESTORE 60720:GOSUB 61520:END
60720 DATA "You are trying to divide b
      y zero. Check the value"
60730 DATA "of all variables in this l
      ine that are being used in"
60740 DATA "division or MODulus operat
      ions."
60750 DATA ***
60760 '
60770 RESTORE 60780:GOSUB 61520:END
60780 DATA "A numeric value has been p
      resented where a string"
60790 DATA "value is required (or vice
      -versa), or an invalidly formed"
60800 DATA "number has been found in R
      EAD or INPUT."
60810 DATA ***
60820 '
60830 RESTORE 60840:GOSUB 61520:END
60840 DATA "So many strings have been
      created that there is no"
60850 DATA "further room avaiable, eve
      n after garbage collection."
60860 DATA ***
60870 '
60880 RESTORE 60890:GOSUB 61520:END
60890 DATA "Basic has come across a st
      ring exceeding 255 characters"
60900 DATA "in length. You may have do
      ne this inadvertently by appendi
      ng"
60910 DATA "two or more strings togeth
      er."
60920 DATA ***
60930 '
60940 RESTORE 60950:GOSUB 61520:END
60950 DATA "We have a rare error here.
       String expressions may generate
      "
60960 DATA "a number of intermediate s
      tring values. When the number of
      
60970 DATA "these values exceeds a rea
      sonable limit, this message pops
       up."
60980 DATA "What we have here is a sor
      t of stack overflow. Make the st
      ring"
60990 DATA "expression in this line le
      ss complex."
61000 DATA ***
61010 '
61020 RESTORE 61030:GOSUB 61520:END
61030 DATA "No DEF FN has been execute
      d for the FN just evoked."
61040 DATA ***
61050 '
61060 RESTORE 61070:GOSUB 61520:END
61070 DATA "Basic has encountered an i
      ncomplete expression, i.e. the"
61080 DATA "operand (the number or var
      iable following the command) is
      missing."
61090 DATA ***
61100
61110 RESTORE 61120:GOSUB 61520:END
61120 DATA "is too long. Split it over
       two lines."
61130 DATA ***
61140 '
61150 RESTORE 61160:GOSUB 61520:END
61160 DATA "An attempt has been made t
      o read past the end of file (EOF
      )."
61170 DATA "Check your file input rout
      ine."
61180 DATA ***
61190 '
61200 RESTORE 61210:GOSUB 61520:END
61210 DATA "The file being read with O
      PENIN is not an Ascii file."
61220 DATA ***
61230 '
61240 RESTORE 61250:GOSUB 61520:END
61250 DATA "Basic cannot find a NEXT t
      o match this FOR command."
61260 DATA ***
61270 '
61280 RESTORE 61290:GOSUB 61520:END
61290 DATA "An OPENIN or OPENOUT comma
      nd has been executed before the"
61300 DATA "previously opened file has
       been closed."
61310 DATA ***
61320 '
61330 RESTORE 61340:GOSUB 61520:END
61340 DATA "We have an RSX (bar) comma
      nd that has not been initialsed.
      "
61350 DATA "If this Basic program was
      supposed to initialise it, it ha
      sn't."
61360 DATA ***
61370 '
61380 RESTORE 61390:GOSUB 61520:END
61390 DATA "Basic cannot find a WEND t
      o match the WHILE command."
61400 DATA ***
61410 '
61420 RESTORE 61430:GOSUB 61520:END
61430 DATA "Basic has encountered a WE
      ND while not in a WHILE loop,"
61440 DATA "or a WEND that does not ma
      tch the current WHILE, in which
      case"
61450 DATA "you have more than one WEN
      D in a WHILE loop."
61460 DATA ***
61470 '
61480 RESTORE 61490:GOSUB 61520:END
61490 DATA "We have a disc error. Type
       ?DERR and consult your manual."
61500 DATA ***
61510 '
61520 PRINT"ACU Basic Bugbuster."
61530 PRINT"--------------------"
61540 PRINT:PRINT CHR$(24);" Line";ERL
      ;CHR$(24);" ";
61550 READ a$:IF a$="***"THEN 61570
61560 PRINT a$:GOTO 61550
61570 PRINT:RETURN
61580 '
61590 RESTORE 61600:GOSUB 61520:END
61600 DATA "An impossible error has oc
      curred. Go to bed and give your"
61610 DATA "listing a thorough look th
      rough in the morning."
61620 DATA ***
```



Check mates



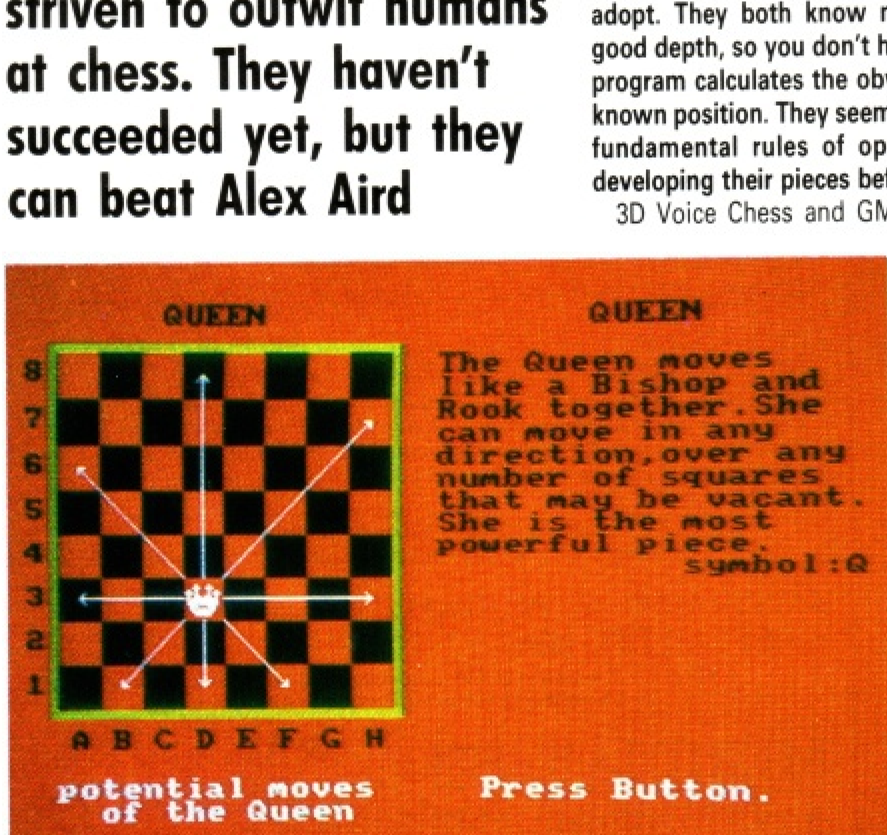
From the early days of computing, programs have striven to outwit humans at chess. They haven't succeeded yet, but they can beat Alex Aird

BOTH Colossus IV and Cyrus II have comprehensive opening repertoires. They will often choose a less well-known line, taking the opponent into unknown territory. This is a good tactic for any chess player to adopt. They both know many variations to a good depth, so you don't have to wait while the program calculates the obvious move in a well-known position. They seem to know some of the fundamental rules of opening play, such as developing their pieces before attacking.

3D Voice Chess and GM Chess both know a great many openings, but few variations. This means they start thinking – rather than reading data – much earlier in the game. In the case of GM Chess this is surprising because each opening is loaded from disc at the start of a game.

The average club chess player has a British Chess Federation (BCF) rating of about 115, which is rather less than half that of Kasparov, the world chess champion. The authors of Colossus IV claim it has a BCF rating of 156.

I wouldn't disagree. Colossus IV's greatest strength is its ability to assume a move for its opponent, then continue analysis of the position based on that assumption. This means that on occasions Colossus IV will reply instantly, even in complex positions.

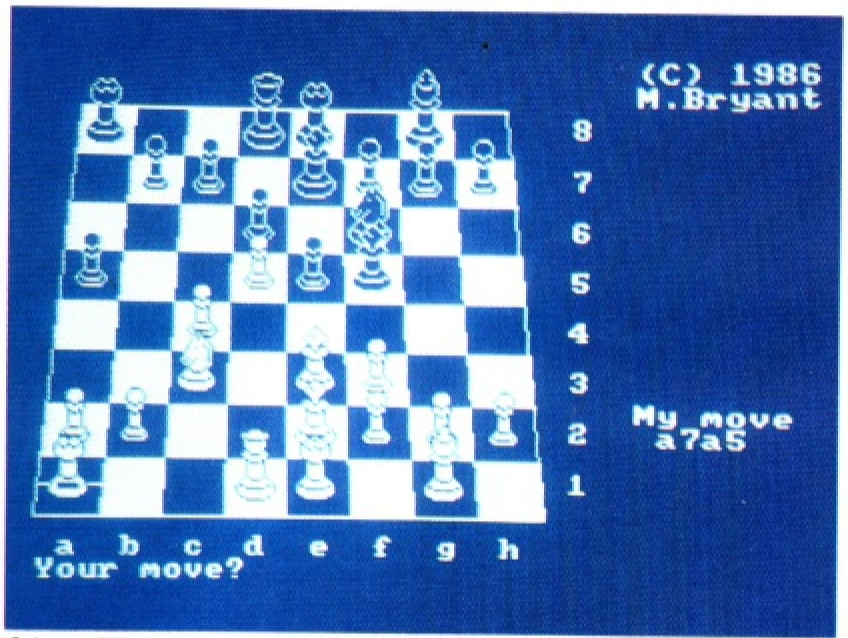


GM Chess is different. It includes a tutorial on how to play chess which gives clear explanations of the rules, how the pieces move, the openings, middle game and end game

Testing time

It is in the middle game where chess is most difficult. A human player should make a plan and decide upon a strategic objective. This is where computer programs *must* fall down. How can a program plan a campaign in a broad strategic fashion? Yet in some ways they play quite well. They can't see something coming, but when faced with a combination they can respond with precise calculation of combinations.

Take a look at Figure I. A computer program is



Colossus IV is the strongest chess program around on the CPC at the moment



When using 3D Voice Chess you must enter the moves in algebraic notation

not intuitive and would never play *1. Bxh7+* yet this is the sort of move many human players would make. Nothing is certain, in fact it may well turn out to be a poor move, yet this cannot be proved for several moves – more moves ahead than any of the programs featured in this article can calculate.

The only thing that *is* certain is that if black accepts the sacrifice, he must play his king in front of his pawns. If he retreats, checkmate is inevitable. If black does not take the bishop then he is simply a pawn behind.

I gave this position to all of the programs and none of them, playing white, would sacrifice the bishop. Playing black all the programs were mated easily on the lower levels by the following, or something similar:

1.	d3xh7+	g8xh7
2.	f3-g5+	h7-g8 ??
3.	d1-h5	f8-e8

At this point imagine the white queen on *g7* and the black king on *e7*. It would be checkmate if the pawn on *f7* were missing. Unfortunately computers have no imagination.

4.	h5xf7+	g8-h8

Both Colossus IV and Cyrus II have a problem mode, and as it is mate in four I decided to see what they made of this position.

Cyrus II took a disappointing 44 minutes. It was looking at *g5xe6* for most of the time. When it finally analysed the queen move, it rapidly reached the correct solution.

Colossus IV took a different approach altogether. Sheer number-crunching is the method it uses. It starts with the king and analyses every move it can make, and every continuation. Then it moves on to the queen, and so on through all of the pieces. If the first move of a problem is a move by a pawn, then Colossus IV may take quite a while to find the solution. It took 20 minutes to find the answer to this problem.

5.	f7-h5+	h8-g8

It is now mate in three. Cyrus II in problem mode took 29 seconds to solve the problem, Colossus IV just 20 seconds.

6.	h5-h7+	g8-f8
7.	h7-h8+	f8-e7
8.	h8xg7	checkmate

On higher levels – approximately 40 moves in two hours – both Cyrus II and Colossus IV (playing black) played *2. .... h7-g6*, and lively play resulted. There are far too many variations to list here, but they are worth trying out. Neither GM Chess nor 3D Voice Chess would play this better move on *any* level.

All under control

Steering in GM Chess is achieved by moving a little pointer around the screen. You can use mouse, joystick or keyboard. Click when the cursor is on top of the piece you want to move, then move the pointer to the destination square and click again. Other options are accessed via pull-down menus. However, it is all too easy to lose sight of the tiny cross that is the pointer.

Colossus IV is controlled by moving a cursor from square to square using either the cursor keys or joystick. Control in Cyrus II is similar, although there is no joystick option. Pressing the spacebar with Cyrus II takes you to a list of options such as load, save, printer, change levels and the like. Press space again to see the board. Colossus IV uses a method of pressing the Shift key plus another key. For example pressing Shift and O changes the orientation of the board.

When using 3D Voice Chess you must enter the moves in algebraic notation. E2-E4, for example. A few options are made available after pressing X for exit.

Cyrus II has by far the best graphics. Movement on the 3D board is a treat to watch. The 2D board is also very clear. You can flip between the boards by pressing the Escape key. It is not possible to change the colours of Cyrus II, but the default colours are the best choice anyway. The colours can be changed in the other three programs. Colossus IV's display uses only two colours, and it can be a little difficult at times to distinguish between pawns and bishops on the



Movement on the Cyrus II 3D board is a treat to watch

O. J. SOFTWARE

FAST FRIENDLY SERVICE

ADVENTURE	Cass	Disc
Jinxter (6128) Only	–	£15.95
Bards Tale	£8.50	£11.95
The Pawn (6128) Only	–	£15.95
Pirates (6128) Only	–	£15.95
Knight Orc	£11.95	£15.95
Guild of Thieves 6128	–	£15.95
Time & Magic	£11.95	£11.95
Countdown to Doom	–	£8.50
Return to Doom	–	£10.95
Silicon Dreams	£11.95	£15.95
Gnome Ranger	£11.95	£11.95
Lancelot	£11.95	£15.95
STRATEGY/SIMULATION		
Adv Tact Fighter	£7.50	£10.95
Colossus 4 Bridge	£9.95	£11.95
Tomahawk	£8.50	£11.95
Hunt Red October	£11.95	£15.95
Spitfire 40	£8.50	£11.95
Matchday II	£7.50	£11.95
Colossus 4 Chess	£8.50	£11.95
Colossus Majong	£8.50	£11.95
P. Beard Int. F/ball	£7.50	£11.95
Hotshot	£8.50	£10.95
Scrabble Deluxe 6128	—	£12.95
Conflicts 1	£10.95	£14.95
Football Director 464	£7.50	–
Football Manager II	£8.50	£11.95
Monopoly	£8.50	£11.95
Scrabble	£8.50	£11.95
Football Dir II	–	£15.95
Blockbusters	£6.95	£10.95
Krypton Factor	£6.95	£10.95
Every Sec Counts	£6.95	£10.95
Yes Chancellor	–	£8.50
L/Board Fam Course	–	£8.50
Silent Service	£8.50	£11.95
F15 Strike Eagle	£8.50	£11.95
Acrojet	£8.50	£11.95
Gunship	£11.95	£15.95
T.P. New Beginning	£11.95	£15.95
Annals of Rome	£10.95	£14.95
Bat/Field Germany	£10.95	£14.95
Pegasus Bridge	£10.95	£11.95
Firezone	£10.95	£11.95
Sorcerer Lord	£10.95	£11.95
COMPILATIONS	**Cass**	**Disc**
Karate Ace	£10.95	£14.95
Gold Silver Bronze	£11.95	£20.95
Supreme Challenge	£10.95	£13.95
Taito Coin Ops	£10.95	–
Take 3 Sports	–	£8.50
All Stars	£7.50	–
Leaderboard Par 3	£11.95	£15.95
10 Great Games II	£8.50	–
10 Great Games III	£8.50	–
Chartbusters	£8.50	–
Comp Hits Vol 4	£8.50	£11.95
Lucas Film Coll	£8.50	£11.95
5 Star Games III	£8.50	£11.95
Magnificent 7	£8.50	£14..95
Summer Time Sp.	£10.95	–
Solid Gold	£8.50	£15.95
Konami Arcade Coll	£8.50	£14.95
Epyx on Amstrad	£8.50	£15..95
4 Smash Hits	£8.50	£11.95
Space Ace	£10.95	£12,95
We are Champions	£8.50	£14.95
F. Brunos Big Box	£10.95	£14.95
Fists & Throttles	£10.95	£14.95
6 Pack Vol II	£8.50	£11.95
6 Pack Vol III	£8.50	£11.95
Game Set & Match	£10.95	£14..95

ARCADE	Cass	Disc
Nigel Mansells GP	£8.50	£11.95 *
Cybernoid II	£8.50	£11.95
Nightraider	£8.50	£11.95
Empire Strikes Back	£8.50	£11.95
Bionic Commando	£8.50	£11.95
Last Ninja II	£10.95	–
Fernandez Must Die	£7.50	£10.95
Vindicator	£8.50	£11.95
Roadblasters	£8.50	£11.95
Marauder	£8.50	£11.95
Games Winter Ed	£8.50	£11.95
The Train	£8.50	£11.95
Captain Blood	£8.50	£11.95
Psyco Pigs	£8.50	£11.95
Samurai Warrior	£8.50	£11.95
Robo Cop	£8.50	£11.95
Darkside	£8.50	£11.95
Bubble Ghost	£8.50	£11.95
Action Force	£7.50	£11.95
Game Over II	£7.50	£10.95
PHM Pegasus	£8.50	£11.95
D. Thompson Oly.	£8.50	£11.95
Nebulus	£7.50	£11.95
The Fury	£8.50	£11.95
Skate Crazy	£8.50	£11.95
Arctic Fox	£8.50	£11.95
1943	£8.50	£11.95
EDUCATIONAL		
Funschool 2-5	£5.50	£7.50
Funschool 5-8	£5.50	£7.50
Funschool 8-12	£5.50	£7.50
Playschool 3-7	£8.95	£12.95
Magic Maths 4-8	£8.95	£12.95
Maths Mania 8-12	£8.95	£12.95
Maxi Maths 9-14	£8.95	£12.95
Better Maths 12-16	£8.95	£12.95
Better Spell 9+	£8.95	£12.95
Biology 1 12-16	£8.95	£12.95
Physics I 12-16	£8.95	£12.95
Chemistry 12-16	£8.95	£12.95
Mapwork Quiz GB+IR	£8.95	£12.95
Weather/Climate	£8.95	£12.95
French Mistress	£13.95	£16.95
German Master	£13.95	£16.95
Spanish Tutor	£13.95	£16.95
Italian Tutor	£13.95	£16.95
Welsh Tutor	£13.95	£16.95
Answer Back Jun	£8.50	£11.95
Additional Question Packs for Answer Back Jun	£4.50	£7.50

BUDGET CASSETTES	
All £1.99 Cassettes at	£1.80
All £2.99 Cassettes at	£2.75
Steve Davis Snooker	£1.80
Fighter Pilot	£1.80
Ghostbusters	£1.80
Sai Combat	£1.80
Super Stuntman	£1.80
Joe Blade II	£1.80
Motorbike Madness	£1.80
Bomb Jack	£1.80
Battleships	£1.80
Exploding Fist	£1.80
Fruit Machine Sim	£1.80
Adv Pinball Sim	£1.80
Kikstart II	£1.80
Beach Buggy Sim	£1.80
Endzone	£1.80
ATV Sim	1.80
Footballer of Year	£2.75
Commando	£2.75
Uridium	£2.75

BUS/UTILITIES	Disc
Advanced Art Studio	£20.95
Protext Office CPM/AMS	£33.95
Advanced Music System	£24.95
Prof Adventure System	£24.95
Protext	£21.95
Protex CPM+ Version	£50.95
Protext Rom	£33.95
Pocket Protext CPM+	£33.95
Prospell	£20.95
Prospell Rom	£29.95
Promerge	£20.95
Promerge+Rom	£29.95
Maxam	£21.95
Maxam Rom	£34.95
Utopia Rom	£24.95
Money Manager (+PCW)	£24.95
Masterfile III	£33.95
Mastercalc 128	£27.95
Supercalc II 6128	£44.95
Siren Mouse Package	£59.95
Siren Discology	£11.95
Siren Discovery+	£11.95
Siren Ultrasound	£11.95
Siren Microdesign	£20.95
Mini Office II	£15.95
Tasword 464D/6128	£20.95
Tas-Spell	£13.95
Tascopy	£10.95
Tasprint	£10.95
Tas-Diary	£10.95
Tas-Sign 6128+PCW	£24.95
AMX Mouse+Art	£62.95
AMX Mouse+Stop Press	£71.95
AMX Stop Press	£42.95
AMX Extra Extra	£20.95
At Last+(6128+PCW)	£33.95
JOYSTICKS	
Amstrad JY2	£11.95
Cheetah 125+	£7.95
Cheetah Starfighter	£13.95
Cheetah Challenger	£4.95
Comp Pro 5000 Clear	£14.95
Comp Pro Extra	£16.95
Euromax Professional	£14.95
Phasor 1	£11.95
Joystar	£9.95
Cruiser	£9.95
Konix Speedking	£10.95
Konix Navigator	£15.95
ACCESSORIES	
Amstrad DD1 Drive	£159.95
MP135+ Printer & Cable	£159.95
MP165+ Printer & Cable	£179.95
DMP 2160	£159.95
MP2 Modulator	£28.95
Rombo Digitiser	£79.95
Rombo Rombox	£31.95
Amstrad 6128 Rom	£16.95
Multiface II	£43.95
464/664 64K Rampak	£44.95
5.25" 2nd Drive (796k)	£149.95
Ribbon DMP 2/2160 Ea	£3.75
2 for £7.00 5 for	£16.25
Covers 464/6128 Col/M	£7.50
Cover DMP 2/2160	£4.50
Cover DD1 Drive	£2.95
Amsoft Disc Ea	£2.65
5 for £12.50 10 for	£22.95
Mousemats	£4.95
Amsoft 6128 Spec	£17.95
Printer Cable	£10.95
664/6128 Cass Lead	£3.50

SPECIAL OFFERS ALWAYS AVAILABLE
CASSETTES FROM £1.99 DISCS FROM £2.99

New games are available on day of release – please phone for availability

Prices include Post & Packing in UK. Please send Cheques/PO's to:
O.J. SOFTWARE, 273 MOSSY LEA ROAD, WRIGHTINGTON, WIGAN, LANCS. WN6 9RN

MOST ORDERS ARE DESPATCHED BY RETURN
(OUT OF STOCK ITEMS USUALLY WITHIN 1 WEEK)
Write or phone (0257) 421915 for FREE LIST
and LATEST RELEASES
OVERSEAS ORDERS:- SOFTWARE ITEMS COSTING OVER £10 EACH POST FREE, OTHERS ADD £1.00 POSTAGE

** SPECIAL OFFER ALL SOFTWARE ORDERS OVER £30 FREE CALCULATOR **
*** Order by Access or Visa 24hrs Answerphone***

ATTENTION AMSTRAD USERS

BBD Professional Dust Covers offer an exclusive range of stylish, top quality protective covers for your computing equipment

Manufactured from top quality washable nylon, BBD Dust Covers have stylish, contrasting piping on all seams.

- NON-FADE
- NON-SHRINK
- NON-CRACK
- MACHINE WASHABLE
- EASY IRON
- FLAME-RETARDANT FINISH
- ANTI-STATIC TREATED
- FULLY GUARANTEED

Covers for the Amstrad CPC 464 .... £7.50
Covers for the Amstrad CPC 6128 .... £7.50
Dark grey with red piping
(Please state monitor type)
(COST INCLUDES VAT AND P&P)

A wide range of printer covers is also available, at prices starting from **ONLY £5.00!** Money-back guarantee if not *completely satisfied!*

BBD DUST COVERS
Sheer Perfection In Computer Protection

DEPT 152,
The Standish Centre, Cross Street, Standish, Wigan WN6 0HQ

TEL: 0257 425839 EXT. NO. 152 FAX: 0257 423909

Personal Callers and Dealers Enquiries Welcome

SCHOOL SOFTWARE LTD.

FREE Catalogue Amstrad CPC, PCW, PC1512, Commodore, BBC, IBM PC

Amstrad PCW – Business Software, School Admin. PC. 24 Hr. Visa/Access Hotline. Ring UK 010353 – 614977 (Office Hours) (Irl. 061-27994) 010 353-6145399 (UK 24 Hr.)

MAXI-MATHS
Amstrad PC, IBM PC, Amstrad 464, 664, 6128.
1. Triangles, 2. Angles, 3. Sin Cos Tan, 4. Rectangles, 5. Circles.
A highly interactive program such as Basic Geometry provides a very stimulating learning environment.

MAGIC MATHS (age 4–8)
CBM 64, All Amstrads, IBM PC
Additions and Subtraction. "A serious challenger to similar BBC programs and a good example of its type". Primary Teaching and Micros UK.

MATHS MANIA (age 8-12)
All Amstrad/CBM 64/IBM PC
Multiplication and Division. "It appeals to the age group. My son has been sneaking downstairs before breakfast to play"
BBC CEEFAX review.

BETTER SPELLING (age 8-adult)
All Amstrads/CBM 64/BBC/IBM PC
"Well Organised Lessons. Educationally it is very stong" 8000 Plus.

BETTER MATHS (age 12-16)
All Amstrads/CBM 64/BBC/IBM PC
Rated in the top five in Amstrad Action educational survey.

CHEMISTRY (age 12-16)
All Amstrads/CBM 64/BBC/IBM PC
"Very ambitious in terms of the range of topics. High standard of questions". 8000 Plus.

BIOLOGY (age 12-16)
All Amstrads/CBM 64/BBC/IBM PC
"A good excuse to play with your computer and have fun while revising". Your Computer.

Mapwork Quiz (9-Adult) CPC, BBC, CBM 64
The Three Bears (5-10) CPC & PC
Physics (12-16) CPC/PCW/PC
School Administration PC1512/IBM

CPC & PCW DISKS £16.95
PC DISKS £22.95
CASSETTES £10.95
Send Cheque Visa/Access/ and Exp. Date
(£1.00 P&P)

Meadowvale Estate, Raheen, Limerick, Ireland.
Tel: (UK) 010-353-61 49477 (IRL. 061-27994)



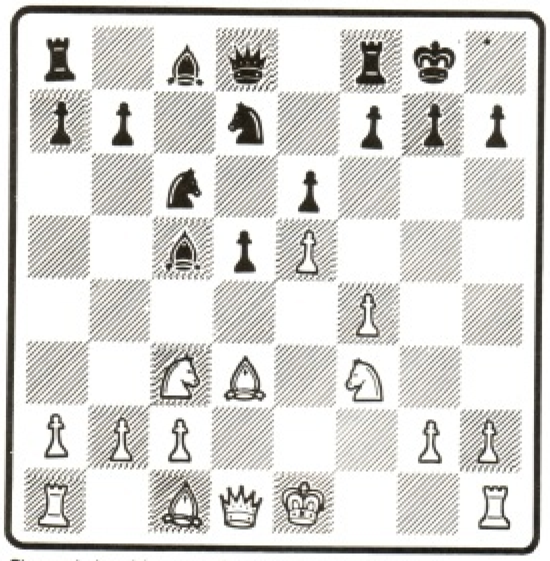


Figure I: Intuitive sacrifice in the middle game

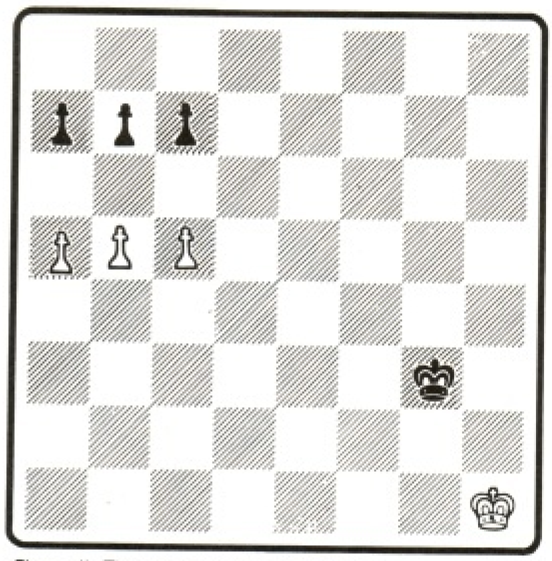


Figure II: The classic endgame position tested on all four programs

3D display. There are no problems with the 2D display. The displays of both 3D Voice Chess and GM Chess are adequate, though uninspired.

If you have a green screen monitor, you will have no problems with the display of any of the programs.

Sticky ending

Back to the chess and the endgame, which is perhaps the most important part of the contest. It is here where small positional or material advantages, or both, are converted into a win.

A player may have a positional advantage, but he must be aware of the fact and be able to convert this advantage into a point. It is all too easy for a winning position to evaporate and a player to be faced, suddenly, with defeat.

The ending in Figure II is that sort of position. White, with one move, can begin the process of queening a pawn. Make the wrong move though, and white will surely lose.

Any move by the king would be wasteful because the black king will march across the board and mop up the white pawns. The answer is to move a pawn, but which one?

3D Voice played quickly, even on the highest level, and every time came up with *1. a6*. GM Chess spent half-an-hour thinking and came up with 1. *c6*. Both of these choices lose. For

THE CONTEST	Col4	Cyr2	3dv	GMC
Colossus IV		2-0	2-0	2-0
Cyrus II	0-2		2-0	2-0
3D Voice	0-2	0-2		1-1
GM Chess	0-2	0-2	1-1	

Figure III: Results after each program played every other program twice

example, *1. a6 ba6 2. ba6 Kf4* and both of white's remaining pawns will be lost.

Both Cyrus II and Colossus IV came up with the correct move *1. b6* fairly quickly, and both gave the correct analysis *1 ... ab6 2. c6 bc6 3. a6* and the white pawn will win the race for promotion.

To find the strongest of the four I played each program against every other program twice at a time limit of 40 moves in two hours. Figure III gives the results.

Interestingly at a slightly faster time limit of 30 moves in 75 minutes, which is the normal time limit in the Birmingham chess league, Cyrus II, with the black pieces, beat Colossus IV. It was clear that Colossus IV was in time trouble after 15 moves or so. As it was short of time it didn't analyse quite deep enough and played several poor moves. At a time limit of 40 moves in two hours however, Colossus IV was at its best, sweeping all before it.

Of the features listed in the features list, some are quite important – for instance, draw by repetition is part of the rules – others are less important.

The lack of the ability to step backwards can be annoying if you manage to enter an incorrect move, and a printout is a nice little extra if you happen to have a printer, but being able to save the current position, I would have thought, is essential; chess is a slow game, not everyone has the time to play to a finish in one session.

The verdict

The majority of chess players I have met prefer silence during a game. Go along to any chess club and the only sound you are likely to hear is the ticking of the clocks. GM Chess has music! It comes on when it is waiting for you to make a move. Colossus IV and Cyrus II confine themselves to little beeps now and again.

3D Voice Chess has, as you might expect, a voice. It is hard to understand what it says most of the time, so the Voice aspect is just a gimmick. The program is competent enough, but is not in the same class as Colossus IV or Cyrus II. The voice can get rather irritating at times and will probably be turned off by most people.

Colossus IV is the strongest chess program around on the CPC at the moment. It is let down a little by its poor graphics, but is the one for strong players who want a challenge. Surprisingly, moves cannot be listed to a printer.

Excellent graphics, strong play, and ease of use make Cyrus II a good choice, too.

It was said once that knowing the alphabet doesn't make someone a poet, and in the same way knowing how the pieces move in chess doesn't make someone a chess player. Using this analogy, GM Chess is illiterate. Does a nice printout though even, if the colours are reversed.

Yes, GM Chess is certainly different – it includes a tutorial on how to play chess which gives clear explanations of the rules, how the pieces move, the openings, middle game and endgame. This sort of thing is available in books, but graphic explanations are easier to follow. However, because a CF2 disc cannot store as much information as a book, the explanations are necessarily limited.

● *Alex Aird has been playing chess for more than 20 years. He must be tired by now. No – seriously – he has attained a BCF rating of 146, and in 1986 he was chosen to play for the Warwickshire county chess team.*

FEATURE LIST	3DV	Col4	Cyr2	GMC
Levels	6	Infinite	12	7
2D board		●	●	●
3D board	●	●	●	
Step backwards		●	●	
Force computer to move		●	●	
Printout			●	●
Analysis		●	●	
Save/load game		●	●	●
Hint	●	●	●	
Self play	●	●	●	●
Draw by repetition		●	●	
50 move draw		●	●	
Clocks		●	●	

Colossus IV: *£9.99 tape, £13.99 disc. Available from all good games software stockists.*

Cyrus II: *£3.50 tape. Available mail order from The Official Amstrad User Club, Enterprise House, PO Box 10, Roper Street, Pallion Industrial Estate, Sunderland, SR4 6SN. (Tel 091-510 8787).*

GM Chess: *£14.95 disc. Available mail order from Camel Micros, Wellpark, Willeys Avenue, Exeter, EX2 8BE. (Tel 0392 421105).*

3D Voice Chess: *£12.95 tape, £15.95 disc. Available from all good games software stockists.*

Knock down ginger



Auntie John gets in the mood with some interrupt-driven machine code sixteen bar blues

FESTIVE greetings. Before you crumple up this month's column and use it to gift wrap a turkey, why not try reading it for a change? It's not as painful as it looks, and who knows, you might even enjoy it. With the holiday season in full swing, everybody's thoughts are turning to questions like:

- How does Father Christmas get down the chimney without leaving soot all over the living room floor?
- What colour socks will Auntie Ethel get me?
- How do you use interrupts on the CPC?
- Why won't Fiona go out with me?

I can answer at least one of these questions, and if you have any suggestions for the others you should get in touch with me via the Editor. Thank you.

Interrupts

Once upon a time my friend Colin was watching a video. Colin has a low boredom threshold, so he soon got tired of this and started watching the television set instead. Now Colin has also been to a university, so he isn't stupid – he switched the TV on and started to watch a film.

```
;
; The interrupt driven machine code sixteen bar blues.
;
kl_init_event equ &bcef
kl_add_ticker equ &bce9
sound_chip equ &bd34
org &4000            ;This is where it's at, man.
ld hl,tickblock+6
ld b,3+128           ;Event class.
ld c,0               ;Rom selection.
ld de,eventcode      ;Address of code to be executed.
call kl_init_event
;
ld hl,tickblock
ld de,100            ;Initial delay time before first event.
ld bc,10             ;Time between interrupts.
call kl_add_ticker
;
call reset_tune
;
ret                  ;Return to Basic.
tickblock ds 13
eventcode
;
; The code that follows is executed every
; time an interrupt is generated.
;
ld hl,(count)
ld a,(hl)
ld e,a
inc hl
ld a,(hl)            ;Get tune data from memory,
ld d,a               ;and put it in DE pair.
inc hl
ld (count),hl
or e
cp 0                 ;Check for end-of-data marker.
jp z,reset_tune
;
ld l,e               ;Copy data into HL pair.
ld h,d
;
srl d                ;Divide DE by 4, see text for reason.
rr e
srl d
rr e
;
ld a,0               ;Data for channel one.
ld c,l               ;That's an ell not a one.
call sound_chip
ld a,1               ;That's a one not an ell.
ld c,h
call sound_chip
;
ld a,2               ;Data for channel two.
ld c,e
```

Listing I: An interrupt driven tune

He had just settled down with a cup of hot coffee and some unformatted chocolate digestives when he heard the doorbell ring. He got up and opened the front door, but there was no one there. Deciding that some of the friendly neighbourhood kids must have been playing a trick on him, he closed the door, rewound the video and sat down again.

After only a few seconds the doorbell rang again. Colin lept up, ran to the door and flung it open, but again there was no one there. He shouted for a bit at some puzzled-looking kids playing on the other side of the road, then went back indoors.

He had only just sat down after rewinding the video when the bell went again. Just as he was about to jump up he noticed that one of the actors in the film he was watching also got up and answered the front door. The doorbell Colin had heard was the one in the film.

Now you might think the only reason I told you that story was to embarrass Colin. Nothing could be further from the truth, I simply wanted to introduce you to interrupts.

Colin had been quietly watching a film when he had been interrupted. He dealt with the interrupt, and then returned to watching the film.

Computer interrupts operate in a very similar manner. A program is in the act of being executed when an interrupt occurs. The computer processes the interrupt – that is, control passes to the interrupt handling routine – and then returns to running the original program.

Just how the interrupts are "serviced" depends on the microprocessor used, the hardware of the system, and how much sleep the electronic engineer who designed the computer got the night before. Even the humble Z80 inside Arnold has three different interrupt modes, not to mention non-maskable interrupts. Each would need several hundred words of explanation.

Fortunately those nice chaps who built Arnold have supplied us with some routines in the firmware to make things almost easy. Notice that I said almost – interrupts are difficult at the best of times, never mind around Christmas.

Non-stop music

As an example, I'm going to show you how to use interrupts to make a tune play constantly in the background. By "background" I mean other programs – Basic, machine code, even your word processor rom – will run at the same time and independently of the tune. As this is incredibly annoying, I'll also show you how to stop the tune from playing.

A routine is needed that will play a note every time it is called – if you called the routine 10 times in a row, it would play the first 10 notes of the tune. The shorter the time between calling the routine, the faster the tune will appear to play.

Imagine a monkey playing a barrel organ. Every time he turns the handle a note is produced. The interrupt is the bloke who feeds the monkey. The more often he gives the monkey a peanut, the faster the monkey turns the handle and the faster the tune gets. Or something like that.

Such a routine has been incorporated into Listing I, following the label *eventcode*. Although the program looks long and involved, don't let it put you off – it can be separated into two smaller programs; one to play the tune and one to set-up the interrupts.

The data for the tune is stored in byte form, along with a special end-of-data marker. When this is reached the program must go back to the beginning and start again. Notice also that two bytes – given the label *count* – are set aside to allow the routine to remember how far along the tune data it has reached. The two bytes point to the address where the next piece of data is to be found. Each time the data is read, this pointer is incremented (has one added to it) so it points to the next piece of data. If the end of the data is reached, the pointer is given the address of the first data byte, back at the start of the list. Thus every time this routine is called, one piece of data is read from a list that determines the note played by the sound chip.

The firmware calls used to create the sound were discussed in the December issue, so against my bank manager's advice – I get paid by the word – I'm not going to go over the details again. But bear in mind that the sound chip is being accessed directly to avoid any nasty internal disputes.

The reason why DE is divided by four at one point is to produce a slightly choral effect when played. You should also bear in mind that I have no musical ability whatsoever.

Tick beep tock beep

Now for the interrupts themselves. The firmware fully supports interrupts and allows very flexible use to be made of them. This means that describing every possible option would take a lot of time and space, so for a fuller description you are advised to sneak a look at the Firmware Guide (Soft 968, available from the User Club).

From the simplest point of view, there can be any number of individual "events" executed after a specified time period. The operating system (OS) automatically takes care of everything; you just tell it where the code you want executed is and how often you want it done.

The OS keeps a special list in mind, and every 1/50th of a second it consults the list and checks to see if any events need doing. If so, it gets all

```
call sound_chip
ld a,3
ld c,d
call sound_chip
;
ld a,8                  ;Allow envelopes on both
ld c,16                 ;channels one and two.
call sound_chip
ld a,9
ld c,16
call sound_chip
;
ld a,11                 ;Define the period
ld c,100                ;of the envelope.
call sound_chip
ld a,12
ld c,10
call sound_chip
;
ld a,13                 ;Choose the envelope.
ld c,1                  ;That's a one not an ell.
call sound_chip
;
ld a,7                  ;Set main register and make sound.
ld c,60
call sound_chip
;
ret                     ;Return from "eventcode" routine.
```

```
reset_tune
;
; Set "count" to point to start of the tune data.
;
ld hl,tunedata
ld (count),hl
jp eventcode
tunedata
;
dw 1911,1911,1517,1517,1432,1432,1351,1276
dw 1911,1911,1517,1517,1432,1432,1351,1276
dw 1911,1911,1517,1517,1432,1432,1351,1276
dw 956,1073,1276,1073,1276,1423,1276,1517
dw 1432,1432,716,716,804,956,804,716,1432
dw 1432,716,716,804,956,804,716,1432,1432
dw 716,716,804,956,804,716,716,358,804,402
dw 1073,536,1204,602
dw 1911,1911,1517,1517,1432,1432,1351,1276
dw 1911,1911,1517,1517,1432,1432,1351,1276
dw 1911,1911,1517,1517,1432,1432,1351,1276
dw 956,1073,1276,1073,1276,1423,1276,1517
dw 1276,1276,638,638,716,851,716,638,1276
dw 1276,1012,1012,956,956,902,851,1432,1432
dw 1136,1136,1073,1073,1012,956,716,804,956
dw 804,956,1073,956,1136
dw 0 ;End-of-data marker
count dw 0
end                     ;End of listing.
```

```
kl_del_ticker equ &bcec
ld hl,tickblock     ;The address of the ticker block.
call kl_del_ticker
ret
```

Listing II: Routine to remove the event from the list

the details from a small table in memory called the ticker block, and goes to the event.

The event is the piece of machine code you want to be executed – in our case the routine needed to play a note. The time period between events is specified in 1/50ths of a second. For example, you could have your routine serviced once a second to maintain a clock, or several times a second to play a tune, or every 10 minutes to remind you to have another cup of coffee.

Writing an event

To write an event, first you must create the ticker block, informing the firmware of the event's address, add the event detailed in the ticker block to the list of events, and RETurn to Basic. Then you add the event subroutine.

The ticker block is 13 bytes long and must lie in the range of addresses &3FFF to &BFFF. Creating this table and adding it to the list of events to be processed needs two separate firmware calls. The first, KL INIT EVENT, needs to be told where the event is and whether it is in rom or ram. In our case the value zero in *ld c,0* indicates ram.

The event class allows the events to be processed in different ways. The value 131 in *ld b,3+128* means "don't go out of your way or anything, it's not that important really".

The call to KL ADD TICKER sets up the frequency of the event, that is how many times a second it is executed. Both times are in 1/50ths of a second. A value of zero is treated specially, because the event is only processed once and then forgotten.

The first time specified – in the DE register pair – is the length of time you want the computer to wait around before making the first call to the event. The second value – in the BC pair – is the length of time between successive calls to the event. In Listing I the inital delay is two seconds, subsequent delays are only 1/5th of a second.

Finally, an optional call is KL DEL TICKER at &BCEC. If perchance you wanted to stop the wonderful music playing, you would load the HL register pair with the address of the ticker block and call KL TICKER (see Listing II).

Further ideas

As suggested earlier, another use for the interrupt routine is a real time clock. The event code would update the time every second and print it on the screen.

Unfortunately, whenever the CPC is accessing tape or disc all interrupts are halted, so the clock will run slow. This is due to the Special Theory of Relativity formulated by Albert Einstein, which states that moving clocks run slower and are shorter than stationary clocks.

A solution to the problem is to accelerate the entire universe, except your CPC, to a speed close to that of light every time the disc or tape is used. Another solution is not to buy clocks from stationers.

And so we reach the end of this month's exciting machine code instalment. I just have time to wish a very happy and peaceful Christmas to you all. Let's all try especially hard to be nice to one another.

NOW OUT!

The bright new magazine that shows you how easy it is to make your own video movies...



If you have a video camera – or just thinking of getting one – you'll find *Video Action!* your passport to an exciting new world. No dull technical reviews but pages packed with help and advice – written by experts in a language ***anyone*** can understand. You'll find all you need to know about lighting, scripting, directing, sound dubbing . . . and the magic of desktop video – using a home computer to create titles and captions and generate your own startling special effects.

It's available at your newsagents now for £1.50. If you take out a 12 month subscription on the form below you'll save £5 off the normal price. *(UK only)*

ORDER FORM

Please send me the next 12 issues of Video Action! for the special price of £13 (normally £18)

Payment: Please indicate method ( )

☐ *Access/Mastercard/Eurocard/Barclaycard/Visa* — *Expiry Date* ___ / ___

No. ____ ____ ____ ____

☐ *Cheque/Eurocheque made payable to Database Publications Ltd.*

Name ______________________

Signed ______________________

Address ______________________

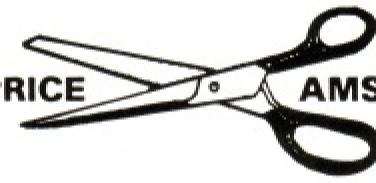
______________________ *Post Code* ________

Send to: FREEPOST, Video Action, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

ACU1

ABBOT

TELEPHONE: (0684) 562061/569059
FACSIMILE: (0684) 569237

CUT PRICE  **AMSTRAD SOFTWARE!**

PROGRAM	RRP	Our Price
Wordstar 1512 (PC1640/1512	£51.75	£25.87
Supercalc 3.1 (PC1640/1512)	£51.75	£25.87
Accounts Master Dual Drive (PC1640/1512)	£99.95	£49.97

Please add £1.50 per program ordered for postage and packing.

All the above quoted prices exclude VAT @ 15%

****

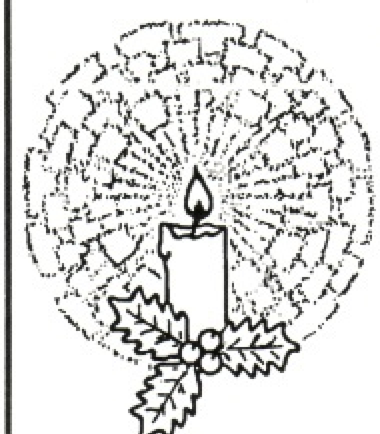
Please inform us, at the time of ordering if the software is intended for a Christmas present and we shall do our utmost to ensure deliveries are made well in time

LIMITED OFFER
WHILST STOCKS LAST

IMMEDIATE SAME DAY DESPATCH FOR ORDERS PLACED USING
ACCESS or VISA cards.

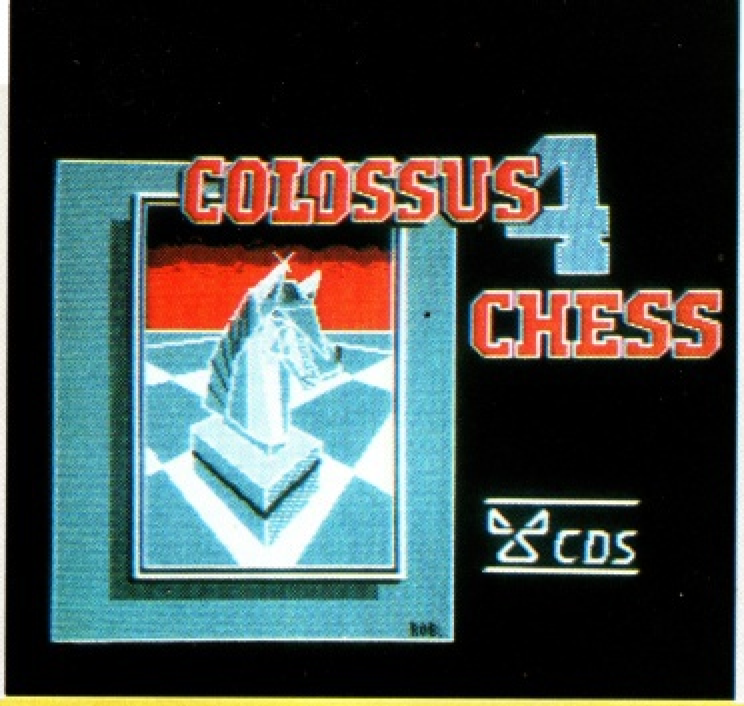
ABBOT COMPUTER PRODUCTS LIMITED

Foley Bank, Worcester Road, Great Malvern, Worcestershire WR14 4QW.



Please do not hesitate to contact us if you have a computing requirement, we shall be pleased to provide a quotation. We are now able to offer full 24 hour call-out warranties on Amstrad PC's

May we wish all our customers
A very Merry Christmas
and a Prosperous New Year



Play chess in Wonderland





WIN THIS UNIQUE CHESS SET

CHESS is one of the oldest games known to man, originating at least as early as the 2nd century AD. Did you know that there are said to be more possible moves in a game of chess than there are atoms in the universe?

The first World Chess Championship was established in 1851, since when there have been many great and famous champions. Bobby Fischer of the USA is reckoned to be the greatest Grand Master of all time – he was World Champion from 1972 to 1974 – but nowadays players of the rank of Grand Master can be defeated by computer.

One of the best selling chess programs on the CPC computer is Colossus IV Chess from CDS Software. To celebrate this fact, and because it is Christmas, CDS has provided a very special prize for ACU readers.

What you see here is a hand-painted Alice in Wonderland resin chess set, complete with a top quality wooden board. It really is something special – a genuine collector's piece.

To stand a chance of winning this unique prize, just answer the three simple questions on the left. The 10 runners up will each receive a magnetic chess set housed in a pocket-sized simulated leather wallet.

QUESTIONS

1. Who wrote Alice in Wonderland?
   (a) Lewis Carroll (b) C. S. Lewis (c) Lewis Collins
2. Who is the current British chess champion?
   (a) Jon Nestel (b) Nigel Short (c) John Nunn
3. Where was the Colossus of Rhodes?
   (a) On the M25 (b) On Barry Manilow's face (c) At the entrance to Rhodes harbour

RULES

1. The winners will be the first 11 correct entries opened on January 31.
2. You may photocopy the form, but only one entry is allowed per reader.
3. Anyone found entering more than one entry form will have all their entries disqualified.
4 .Employees of Amstrad Computer User and associated companies may not enter.
5. The editor's decision is final. (We can't trust the editor's assistant).

ENTRY FORM

1 ☐ 2 ☐ 3 ☐

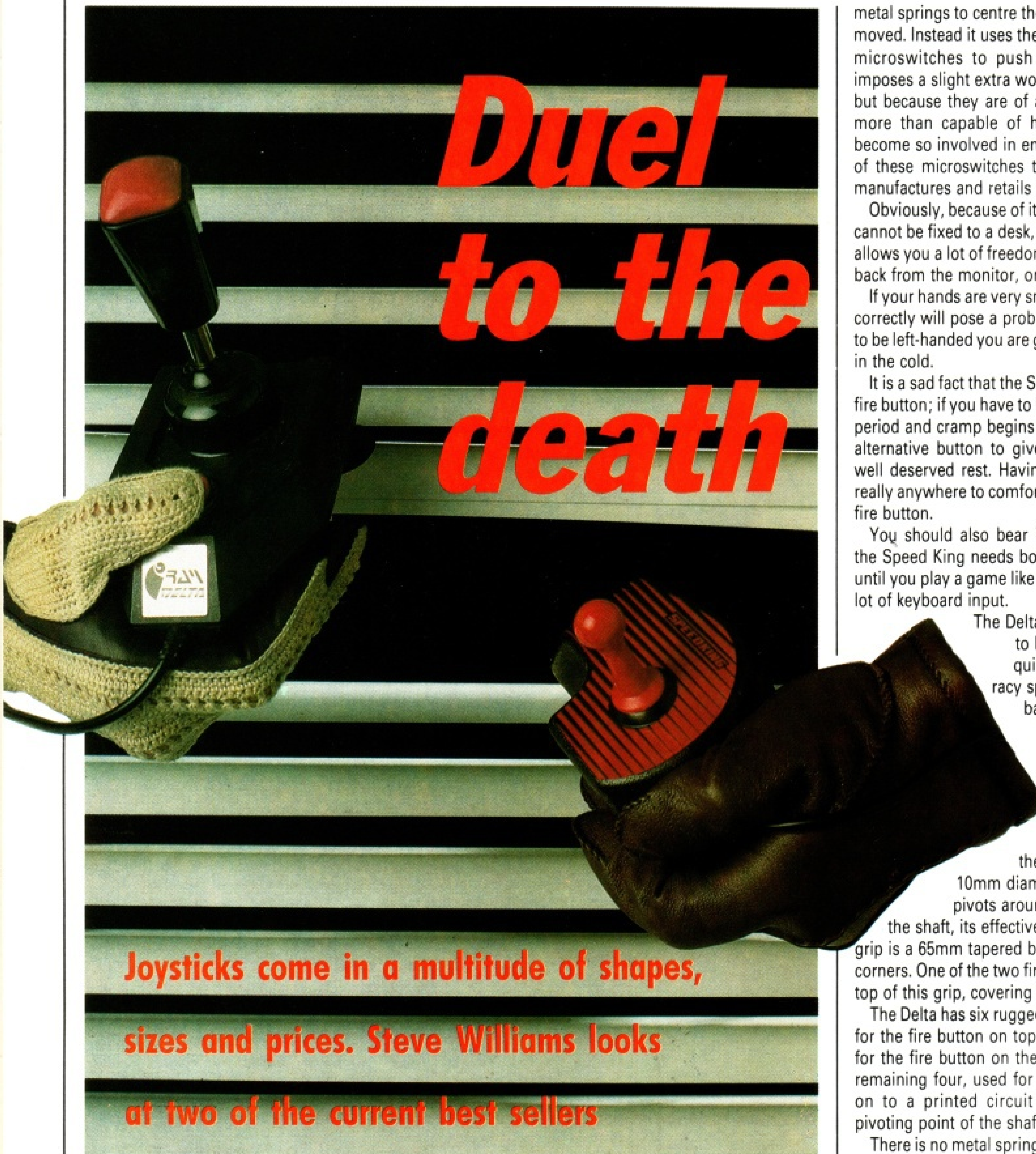
Name____________________

Address____________________

____

__________ Phone__________

Send to: Colossus Chess Competition, *Amstrad Computer User*, 169 Kings Road, Brentwood, Essex, CM14 4EF.



Duel to the death

Joysticks come in a multitude of shapes, sizes and prices. Steve Williams looks at two of the current best sellers

THE Konix Speed King is a joystick designed to fit snugly into the palm of an average left hand, the fingers and thumb wrapping around the sides of the unit. To enable the user to get a better grip, grooves are cut into the sides for the thumb and middle finger. At the point where the index finger comes to rest there is a trigger action fire button.

The shaft, 95mm long and 4mm in diameter, is made of solid steel. It travels down the full depth of the box and is anchored to the base of the joystick by a ball-and-socket joint. The upper end of the shaft is surrounded by its distinctive red plastic handle, tapering slowly inwards and upwards until it terminates with a small round ball. This handle has a total throw of about 10mm – half a centimetre in each direction.

Inside the Speed King are five sturdy-looking microswitches soldered into position on a printed circuit board. The cluster is set about 40mm above the shaft's ball-and-socket joint, which means the pivot point is set as close as possible to the hand. Because the pivot point is so close to the hand, and because the shaft is so short, rapid and sustained movement of the handle is extremely easy to achieve. The action is concise, precise and accurate.

The Speed King does not use conventional metal springs to centre the shaft after it has been moved. Instead it uses the spring action from the microswitches to push the shaft back. This imposes a slight extra workload on the switches, but because they are of a high quality they are more than capable of handling it. Konix has become so involved in ensuring the high quality of these microswitches that the company now manufactures and retails its own brand.

Obviously, because of its shape the Speed King cannot be fixed to a desk, but the 1.75 metre lead allows you a lot of freedom – you can stand or sit back from the monitor, or even walk around.

If your hands are very small, gripping the Konix correctly will pose a problem, and if you happen to be left-handed you are going to be left right out in the cold.

It is a sad fact that the Speed King has only one fire button; if you have to keep firing for a lengthy period and cramp begins to set in, there isn't an alternative button to give your trigger finger a well deserved rest. Having said that, there isn't really anywhere to comfortably position a second fire button.

You should also bear in mind that operating the Speed King needs both hands, which is fine until you play a game like Cybernoid that needs a lot of keyboard input.

The Delta is a joystick that begs to be thrown around. At a quick glance it looks like a racy sports car gearstick. The base shape is a squared-off triangle with three suction cups, one at each corner.

Set 40mm from the rear of the unit, and 135mm long, the solid steel shaft has a 10mm diameter. However, since it pivots around a point 20mm along the shaft, its effective length is 105mm. The grip is a 65mm tapered box shape with rounded corners. One of the two fire buttons is situated on top of this grip, covering the entire top surface.

The Delta has six rugged microswitches. One is for the fire button on top of the handle, another for the fire button on the front of the base. The remaining four, used for direction, are soldered on to a printed circuit board set under the pivoting point of the shaft.

There is no metal springing system. Instead the shaft passes though a solid rubber doughnut which produces the centering action. Said action is very strong and because there is no metal to fatigue it never weakens. In the distant past I once managed to completely wear out a lesser joystick in the course of finishing Sorcery Plus. The Delta has completed Dark Side, On The Run, most of Elite and it still centres like new.

The Delta's throw is 60mm, which is slightly long, but necessary for the type of game that is best played with this stick. The response is positive and there is a nice audible click to tell when the switch has been tripped.

Although the strong centering action makes it a little too robust in its action for pinpoint accuracy, the Delta is value for money and built to last.

Even the most enthusiastic games player will have difficulty wearing it out.

The verdict

Computer games generally fall into two categories – those that need rapid joystick input and those that call for a fast fire button finger.

The Speed King is currently the best selling hand-held joystick on the market. Specifically designed for games that require an incredible amount of joystick movement with the occasional fire button input, it has no equal at the price. It is sturdily built and excellent value. It was not designed for, and does not work best with, games that also require a lot of keyboard input.

Games that I found played well with the Speed King include Saboteur, Frank Bruno's Boxing, World Games, Yogi Bear, Impact, Bruce Lee and Way of the Exploding Fist.

The Delta is a durable, well built workhorse. It can double as a hand held stick, but this is not its primary strength. As a table top joystick you will have to look a long way to find something that comes close at a similar cost.

Games that I found played better with the Delta include Elite, Strike Force Harrier, Sorcery Plus, Tank Command, Steve Davis Snooker, Driller, Dark Side, Moon Cresta, Gothik and Sidearms.

Both the Speed King and the Delta fulfil the purposes for which they were designed. And at a collective price of under £20, you can pack both these pistols without having to dodge the bank manager's bullets on the way out of town.

The Konix Speed King costs £9.80 and comes with a 12 month guarantee. It is available from most home computer retailers, or contact Konix Computer Products, Units 12-14, Sirhowy Industrial Estate, Tredegar, Gwent, NP2 4QZ. (Tel 0495 350101).

The Ram Delta costs £9.95 and comes with a free 24 month guarantee. It is available from Boots, most home computer retailers, or contact Ram Electronics (Fleet) Ltd, Unit 16, Redfield Industrial Park, Redfield Lane, Church Crookham, Hants, GU13 0RE. (Tel 0252 850085).



WYN Holloway, the man who designed the Speed King, is not a man to waggle his own joystick: "I'd say we've done reasonably well over the last three years," is all he admits to. In the first three years of trading Konix has sold more than three million Speed King joysticks, exporting its products to every country in the world except Russia.

Five years ago Wyn was a semi-unemployed carpenter working part time behind the counter of a local computer shop. Daley Thompson's Decathlon was the newest release, and enthusiasts of the program were wearing out their joysticks at breakneck speed.

The joysticks at that time were priced around £13 – the same joysticks sell today for half that price – and Wyn thought the public were being ripped off. He decided to design and manufacture a joystick that could withstand the rigours imposed by games like Daley's Decathlon.

Armed with a prototype Speed King, he tried everywhere to find a backer. Eventually he found someone to sponsor his efforts to the tune of £25,000, after which his bank chipped in with an extra £3,000. The first tooling machine cost £22,000 leaving him £6,000 to get the business started.

Wyn now drives a £30,000 Corvette convertible, proving that they don't call him Hotshot Holloway for nothing.

MARTIN Shoebridge, Ram's Technical Director, feels his company cannot improve its production reputation any further, and he is constantly keeping an eye towards strengthening Ram's activities. At the moment Ram Electronics manufactures peripherals for the IBM PC, Apricot, Z88, Spectrum, Commodore, Amstrad PCW and Amstrad PC. Its CPC range includes The Music Machine and the Dk'tronics range of hardware add-ons. The company is currently looking closely at the prospect of producing satellite dishes, maybe in competition with Amstrad plc. The Delta, which by the end of this year will have sold about 50,000 units, is a relative newcomer to the joystick scene, imported exclusively by Ram Electronics. According to an official Ram spokesperson the joystick is manufactured in Hong Kong by a company called Charlie Chan Ltd, which is a polite way of saying that Ram does not disclose this sort of information.

I asked Martin why his company had decided to get involved with joysticks: "In order to diversify our business," he replied. Stonewall Shoebridge they call him down Aldershot way.

Seek and ye shall find

Delving into Adventures with Bill Brock

SEVERAL times over the last few years I have written about the need for state-of-the-art adventures, about the need for graphics, and about the relative merits of super parsers. At the end of the day I firmly believe that what makes an adventure good, is the way in which the plot is put over, not how many goodies are included in the package or the programming.

What masks this simplistic approach is that top adventure houses like Level 9 and Magnetic Scrolls spend as much time and money on getting the plot right as they do on their respective operating systems. Their adventures are very good not just because of the state-of-the-art approach – this is simply a bonus, which makes a good game better.

Not everyone likes the same type of adventure, but whatever your preference a well implemented plot will get you into the right frame of mind. Cleverly matched parsers and text will encourage you to travel along the right paths, even if they are dead ends.

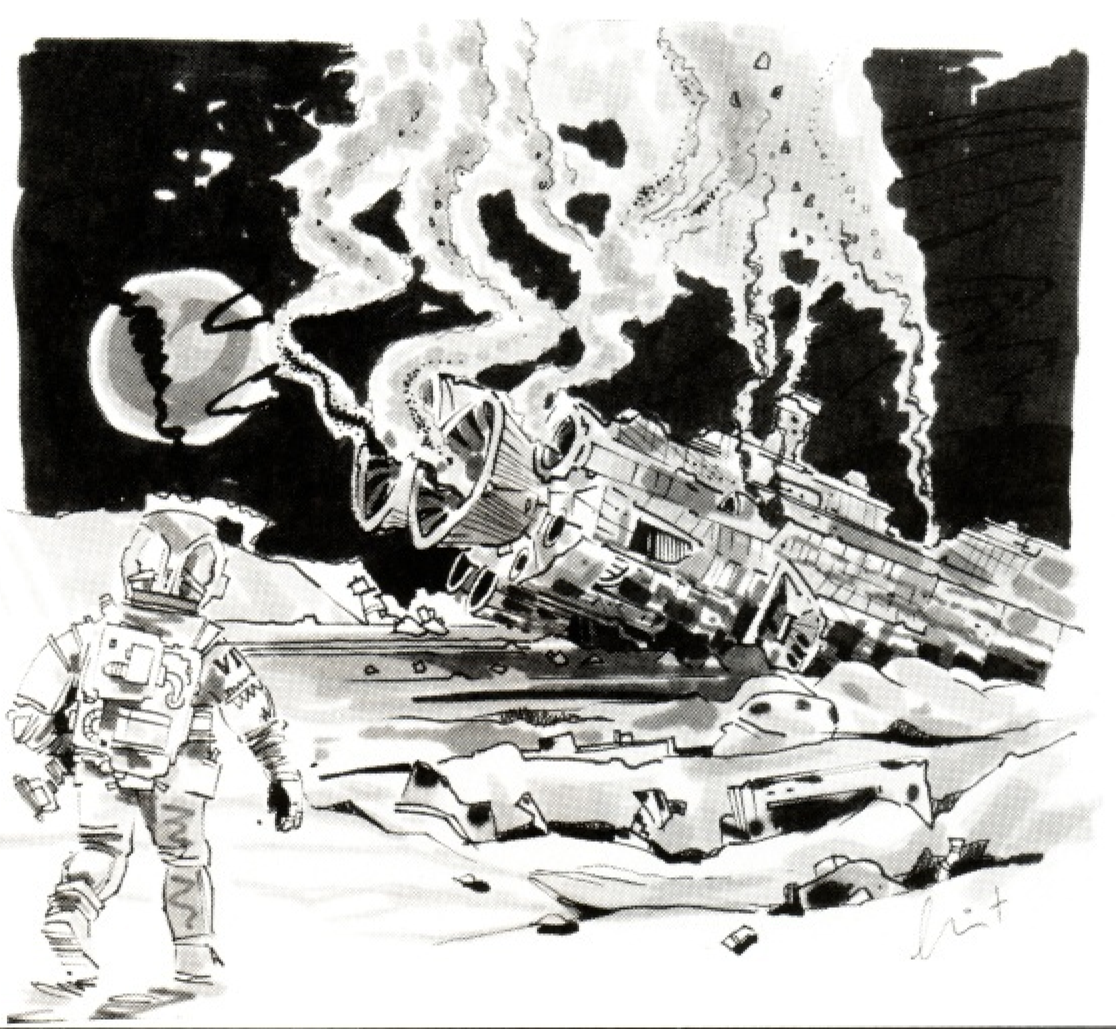
Just because you come across a bathroom you should not feel a need to type in "run bath" if the flow of the story inhibits this line of approach. The story flow is all important. A rudimentary parser and vocabulary can be perfectly adequate, providing both work closely together.

Proof of this may be seen in some icon-driven or menu-driven adventures where only a limited range of actions is possible. Their success lies in a cleverly constructed approach to the plot – and our conscious or unconscious acceptance of those limitations.

RETURN to Doom is a recent release from Topologika. Unlike other games from the same source, this is a new adventure and not a conversion of an old BBC Micro program. It is available for both CPCs and PCWs, but only on disc.

Written by Peter Kilworth, this, the second adventure in a Doom trilogy, follows on from Countdown to Doom, which was a race against time to escape from the inhospitable planet of the title.

Return to Doom brings you back to the planet on a rescue mission. A spaceship with the Ambassador of Regina has crash-landed on Doom.



With the lessons learned from that last visit still fresh in your mind, you manage to land safely near the site of the crash. You must find the survivors and get them off the planet to safety.

Using a similar operating system as before, you will quickly find that there are no commands to examine, search or look more closely at your surroundings. Everything that may be useful is included in the location description.

The parser accepts multiple inputs and the use of "all", but is not always very bright at interpreting your intentions. An early example of this is finding a door that you cannot open. You try "knock on door". The response is that this is not understood and only later do you learn that "knock" is all that is needed.

In a devious series of barely related puzzles, location after location has something stopping progress. Often you must use an object you have found elsewhere to solve the present puzzle. This immediately suggests that there is an optimum sequence in which the problems should be tackled. You must learn by your mistakes as these could frequently change the course of events.

With only a limited number of objects available, using them is a simple matter of elimination. But later the going gets really tricky. Should you get stuck there are a number of excellent on-screen hints. Check the instructions for a number relating to that puzzle – there are 88 of them – type in "help" and you will be asked which number hint you require.

There may be a series of clues for any given puzzle and there is a warning when the most significant one is about to be given. Accessing these clues is perhaps too easy, unlike the Magnetic Scrolls system where you have to type in an extensive code before you are given anything at all.

But Return to Doom is difficult if played without

using the hints. The faults in the parser are not so much its classical dependence on a combination of verb-and-noun inputs, but the basic error on the part of the writer to foresee obvious uses of recognised verbs with recognised nouns.

Heaven can wait

DID you know that God smokes cigars and has lost his favourite zygotic receptacle? You didn't? Then you have not yet played The Quest for the Golden Egg Cup. This inexpensive entertainment distributed by Mastertronic is now on a flippy cassette – CPC on one side, Spectrum on the other.

An early Quilled version of this adventure appeared some time ago on the ZX Spectrum. Smart Egg Software, which enjoyed its light-hearted theme, has collaborated with the author in rewriting the present reincarnation using its own adventure system.

Although much of the original layout and storyline remains, several of the puzzles are different. Even the red herrings from the first version may now be used for a quite destructive, albeit finally productive purpose.

You may well get that feeling of déjà-vu. Some of the items to be found may have first seen the light of day in other adventures, but do not expect them always to have quite the same uses or effects as before. Your character is that of a slightly dozy guy or doll who has been fatally run over by a C5 while walking down a motorway. Arriving in a Golden Temple, God offers the option of reincarnation – providing you find and return his missing golden egg cup.

The game is divided into a series of groups of locations, within which you may freely move around and explore. To move on to the next series a puzzle will have to be solved.

You start your quest right there in Heaven. Wandering around this section of eight locations is quite revealing. Examine, look in and look under everything you possibly can because your return is not permitted as freely as is your exodus.

A number of everyday objects – and some not so everyday – will help you on your quest. There does not seem to be any penalty for borrowing them, so you may as well take advantage of His generous understanding of your needs. You must find a way of getting these objects out of Heaven and down a giant beanstalk to the material world. Get as much out of Heaven as you can – everything can be used for something.

Not only is death just an unwary step away, but one of the independent characters may steal something vital from you during your travels. Stolen items can be found, but it is often less hassle to just reload your last save.

You may only carry a limited number of artifacts and anything dropped can be stolen. Try to learn exactly what you need for the next few puzzles and keep them about your person, Two characters roam freely around the game, Dandalf and Thoron. Their actions will often amuse, but they do present occasional problems with their acquisitive habits.



Shortly after reaching earth you encounter an interesting maze. It has quite a few locations and once you find a source of light you will need to map it carefully. This is not difficult because each location has a different description: Remain cool and remember to treat it as a maze, not as a normal box map.

There are plenty of clues to help you along the right path and the few people you meet can prove interesting. The text is full of humour and although the puzzles might appear daunting at first, they are not too difficult. Having solved the entry to the final section you will learn that three treasures have to be found to retrieve the missing egg cup. Trekking back and forth over the previous sections ferrying objects around will help solve the final puzzle. Good mapping and perseverance will pay off.

The parser will accept moderately complex commands, but no multiple actions are allowed. Fortunately program operation is fast, so retracing your steps is reasonably quick. Although the graphics are colourful, they are in no great detail and barely serve as a visual indication of where you are.

Quest for the Golden Egg Cup is a fun adventure. Solve it and you will be given a password to be used in a sequel. Whether this is spoof or true, we will just have to wait and see. I rather hope we can look forward to more of the same.

Ratings

	Return to Doom	Golden Egg Cup
Plot	65	66
Atmosphere	62	63
Addiction	66	66
Difficulty	75	58
Overall	64	65

AMSTRAD
Computer User

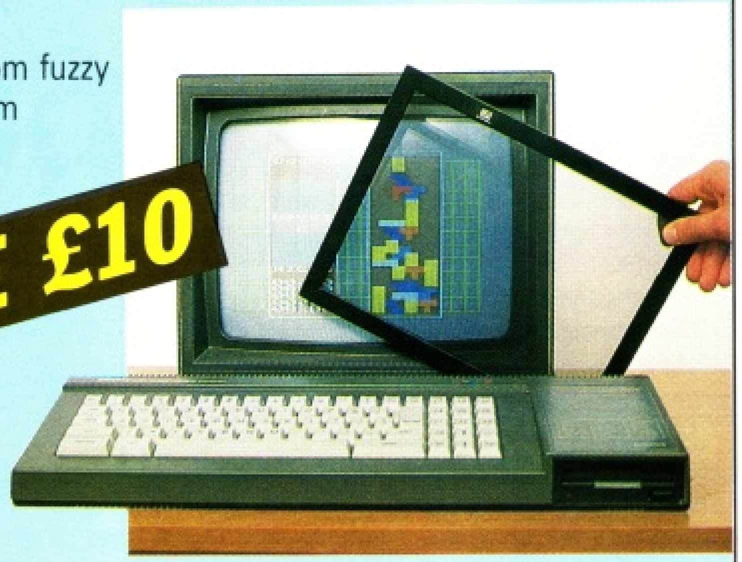
EXCLUSIVE
READER
OFFER

Cut out the dazzle with these anti-glare filters

These unique filters incorporate a specially designed micro-mesh system which lets most of the light from your VDU get through, but blocks out unwanted reflections and limits the amount of glare.

With the filter in place you'll notice a marked difference in the quality of your display. Characters become clearer and easier to read, while graphics really stand out.

So give your eyes a rest from fuzzy displays and get the maximum effect from your monitor by ordering your screen filter NOW!



SAVE £10

RRP £19.95

Our price **£9.95**

To order your filter, please use the form on Page 65

BE A SURE-FIRE HOTSHOT

This is the latest smash from Addictive – a unique game of strategy for one or two players which combines the best elements of Pinball, Breakout and Tennis.

Trap a bouncing missile with your suction gun and send it spinning across the arena to destroy your opponent or smash through barricades.

Hotshot is a fast-action game which will keep you playing for weeks and is sure to become one of the top games of the year. At only £7.99 on tape, or £11.99 on disc, it represents fantastic value for money.

£7.99 TAPE

£11.99 DISC



SAVE up to £3!

TO ORDER PLEASE USE THE FORM ON PAGE 53

Superior's Knockout Competition



BY Fair Means or Foul is the fabby new boxing game from Superior Software, the best game from the golden ring to make it to the CPC's silver screen.

In addition to the normal head punch, body blow, upper cut and duck punch you can wait for the dozey ref to look away and get in a quick head butt, groin punch or kick. Only the most skilful and devious players will make it to World Champion. Very few will be able to hang on to the title.

Even the crowd enters the spirit of the game, egging you on by shouting "C'mon pansy" and "Hit 'im".

To get you into shape for this computer challenge, Superior has put up a purse of £200 worth of sports equipment. Just the thing to tone up your triceps, biceps and pectorals before grasping the joystick.

Six runners up will get the chance to study tactics from Mike Tyson videos. All you have to do is answer three simple questions.

QUESTIONS

1. Which one of these ex-boxers has a twin brother?
a) 'Enry Cooper b) John Conteh c) Dave "Boy" Green

2. Who floated like a butterfly and stung like a bee?
a) Mohammad Ali b) 'Enry Cooper c) Pee Wee Herman

3. Which software company has just joined forces with Superior?
a) Alligata b) IBM c) 'Enry Cooper

QUEENSBURY RULES

1. All entries must get to the weigh-in by January 31.
2. No hitting below the belt or sending in more than one entry. Anyone found infringing either of these rules will be KO'ed.
3. The judge's decision is final.

ENTRY FORM

1 ☐ 2 ☐ 3 ☐

Name____________________

Address____________________

____

____________ Phone____________

Send to: Superior Software Competition, *Amstrad Computer User*, 169 Kings Road, Brentwood, Essex, CM14 4EF.

Learning has never been such fun!

fun school 2

DATABASE EDUCATIONAL SOFTWARE

A computer is an ideal teaching tool for young children – if you have the right software.

Fun School 2 is available for three age groups: Under-6s, 6-8 years and Over-8s. Each pack consists of eight colourful and exciting programs carefully designed by a team of educationalists.

The computer itself monitors the child's progress. The skill level – initially set by parents – is automatically adjusted to suit the child's ability.

Now children can enjoy using their parents' computer while they learn at their own pace.

You can give your children an unfair advantage with Fun School 2 – it's the ideal way to introduce youngsters to the joys of using computers.

Detailed instructions are supplied with each pack giving educational help to parents and teachers, together with full instructions for each program.

A colourful button badge with each package!



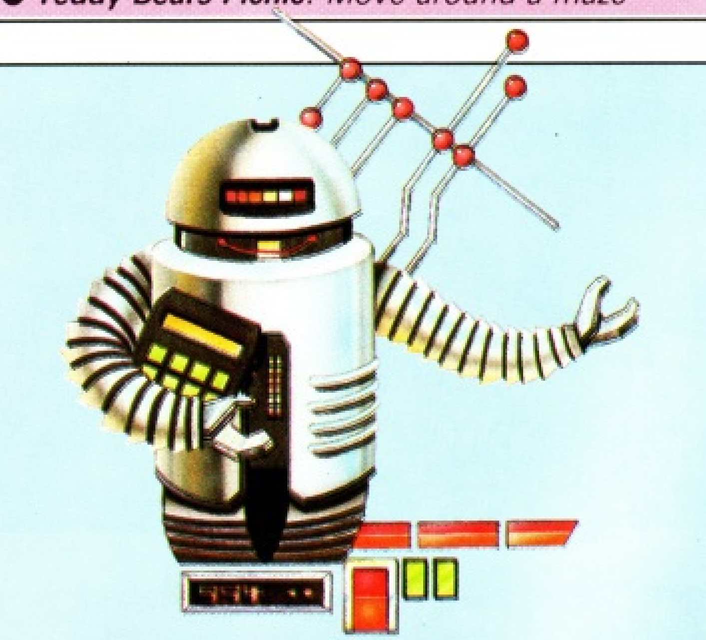
Fun School 2 for Under-6s contains:

- ***Shape Snap:*** *Colourful shape recognition*
- ***Find the Mole:*** *Experiment with number sizes*
- ***Teddy Count:*** *Ideal introduction to numbers*
- ***Write a Letter:*** *Creative fun at the keyboard*
- ***Colour Train:*** *Play at spotting colours*
- ***Pick a Letter:*** *Word building made easy*
- ***Spell a Word:*** *Enjoy naming the pictures*
- ***Teddy Bears Picnic:*** *Move around a maze*



Fun School 2 for 6 to 8 year olds contains:

- ***Number train:*** *Calculations made enjoyable*
- ***Shopping:*** *Which shops for which products?*
- ***Maths Maze:*** *Fun improving arithmetical skills*
- ***Treasure Hunt:*** *Introduction to coordinates*
- ***Bounce:*** *Get to grips with angles*
- ***Packing:*** *Discover tesselating shapes*
- ***Caterpillar:*** *Word building challenge*
- ***Number jump:*** *Have fun practising tables*



Fun School 2 for Over-8s contains:

- ***Build a Bridge:*** *Shape-fitting challenge*
- ***Passage of Guardians:*** *Enjoy anagrams*
- ***Unicorn:*** *First steps in problem solving*
- ***Logic Doors:*** *Mapping made easy*
- ***Souvenirs:*** *An introduction to travel*
- ***Code Boxes:*** *Discover binary arithmetic*
- ***Mystery machine:*** *Have fun breaking codes*
- ***Escape:*** *A final check on progress*

ORDER FORM

Please supply Fun School 2 on ☐ tape at £9.95* ☐ 3in disc at £12.95*
For ages: ☐ Under-6s ☐ 6-8 years ☐ Over-8s
Amstrad CPC version

** Add £2 Eire/Europe, £4 Overseas*

☐ Cheque payable to Database Software

☐ Please debit my Access/Visa card no:

Expiry date: /

Name________________

Address________________

________________ Postcode________________

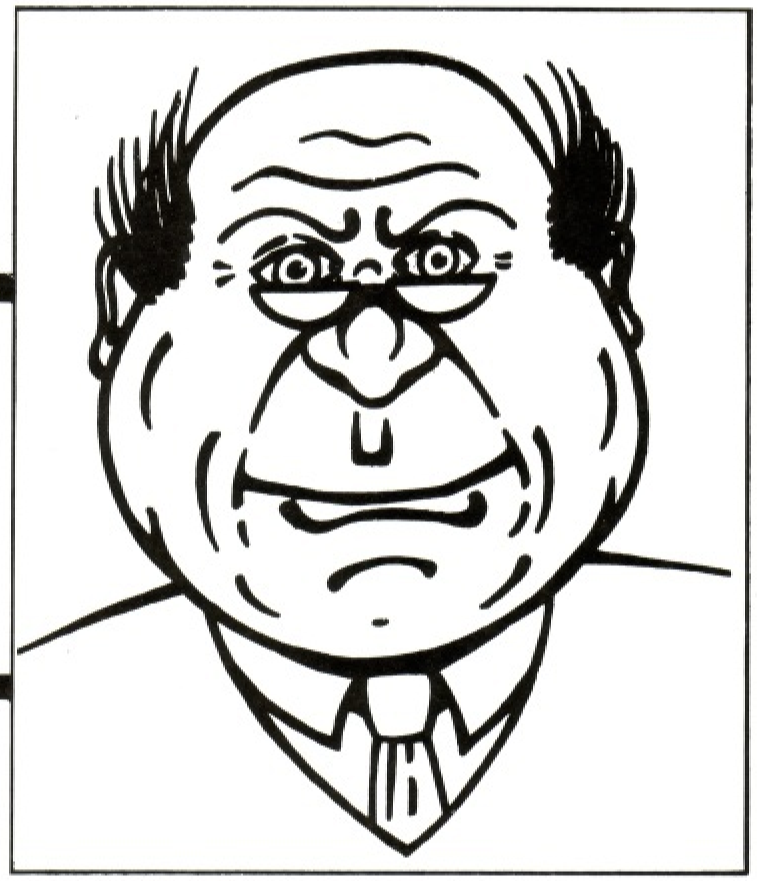
Signature________________

SEND TO: **Database Educational Software, FREEPOST, Europa House, Adlington Park, Adlington, Macclesfield SK10 4YB.**

Order Hotline: 0625 879920 (Credit card only)

R254

Applications advice



It's the silly season for printers again as David Foster answers your questions and patches up the patches

THIS month's column is suffering a little in the aftermath of the September postal strike and at the time I write the mail is only just getting back to normal. In spite of that I still have several questions to answer, as well as an update on the patches for the Starwatcher and Project Planner programs published in the September and October issues.

Wot no CP/M?

I have on several occasions had requests for help with CP/M Plus. For some reason the prospect of using it seems to strike fear into many hearts. This is probably because it isn't just sitting waiting for you in the same way as Amsdos and Basic are.

This is a great shame because there is a mountain of good quality software available for use under CP/M Plus, some of which does not have an equivalent under Amsdos. CP/M Plus is also a good introduction to other operating systems, many of which are based on CP/M. Learn how to use CP/M Plus and you are well on the way to understanding MSdos – as used on IBM and Amstrad PCs.

The complications of CP/M Plus have recently been eased to a great extent with the introduction by Graduate Software (0332 702993) of a service to put your CP/M Plus on to roms. Not only does this save messing around with the initial booting from disc, speeding things up considerably, but the latest rom version also incorporates many of the most commonly used commands, removing the need to have them available on disc.

Graduate has also created a number of other commands that simplify the running of programs and selection of colours which, while not strictly speaking being part of standard CP/M Plus, all go to make its use simpler.

If you want to use CP/M Plus regularly, I would suggest that it is well worth considering the Graduate CP/M rom service. You will, of course, need a rom board to hold the roms.

Starwatcher printer patch

In the September issue I published a patch for the Starwatcher program. It appears to have caused a lot of trouble, judging by the telephone calls to the editorial office.

There were two reasons for this. Firstly a bracket disappeared from the listing at some stage, and secondly the published patch only works with the disc version of Starwatcher. The correct listing for the disc version, complete with bracket, is shown in Figure I.

I have managed to get my hands on a copy of the tape version of Starwatcher and a suitable patch is provided in Figure II. The changes in the tape version do not increase the number of blocks in the file, so, with care the file, called BASICA.BAS, may be saved over the top of the original one.

I have tested both patches and they work perfectly with Epson compatible printers. There are one or two points to note, however. If you have a printer with an IBM mode, make sure it is set to Epson mode first. And reset the printer, because one of the few differences between the codes for Epson and IBM mode is the way that linefeeds are handled. This affects the result. Starwatcher will not work if any extra roms are initialised.

The screen dump produced is slow, and does not produce a full width one. However, the final

1. Load, but do not run the Basic file called BASICA.BAS

2. Edit line 1800 to read:

```
1800 IF s%<>0 THEN GOSUB 28000:IF k%=8
9 THEN ORIGIN 0,0,0,639,399,32:POKE 16
459,10:POKE 16460,0:POKE 42643,15:POKE
 42644,0:POKE 42671,64:PRINT#8,CHR$(27
)+CHR$(65)+CHR$(7):CALL 42598:ORIGIN 0
,32,0,639,287,32:RETURN ELSE RETURN
```

3. Re-save the program.

Figure I: Procedure to make the disc version of Starwatcher work with an Epson compatible printer

1. Load, but do not run the Basic file called BASICA. This is the third file on the tape.

2. Edit line 1800 to read:

```
1800 IF s%<>0 THEN GOSUB 28000:IF k%=8
9 THEN ORIGIN 0,0,0,639,399,32:POKE 17
816,15:POKE 17817,0:POKE 17844,64:POKE
 17959,10:POKE 17960,0:PRINT#8,CHR$(27
)+CHR$(65)+CHR$(7):CALL 17771:ORIGIN 0
,32,0,639,287,32:RETURN ELSE RETURN
```

3. Re-save the program.

Figure II: Procedure to make the tape version of Starwatcher work with an Epson compatible printer

result is clear and well proportioned on my printer.

Project Planner patch

As a result of the problems with Starwatcher, I have checked Project Planner and find there are differences between the disc and tape versions of that as well.

Figure III is a listing of the changes needed to the disc version and Figure IV the changes to the tape version. As Project Planner is in two parts, some lines need changing in both.

Load the appropriate program and make the modification before re-saving it with the same name. The files on my tape version were protected from view, using the Amsdos protected save mode. If you have the Utopia rom you can load these with LOAD, then specify the load address as &170. Finally use LINK, after which you will be able to see the listing. Many other available programs will do a similar job.

The length of the printed page can be changed by adjusting the 71 or 72 in the lines containing *FOR n=71-(3+2*c9)* and *FOR n=72- (3+2*c9)* to suitable values for the number of lines per page.

I have tried both versions and the printed result in both cases is quite satisfactory.

In most cases the changes amount to removing PRINT#8 statements, but there are one or two other changes as well.

In the file called MODIFY.BAS:

```
10000 FOR n=1 TO 72-(3+2*c9):PRINT#8:N
      EXT
```

In the file called DATES.BAS:

```
1300 IF ky$<>"y" AND ky$<>"Y" GOTO 990
2330 NEXT:FOR t=1 TO 32:PRINT#8:NEXT:G
     OTO 990
2400 FOR n=1 TO 32:PRINT#8:NEXT:GOTO 9
     90
2470 FOR n=1 TO 71-(3+2*c9):PRINT#8:NE
     XT
2580 PRINT#8,CHR$(27);CHR$(75);CHR$(6)
     ;CHR$(0);:bit=1
3160 IF sr=0 THEN PRINT#8,k$;SPC(5):GO
     TO 3180
3230 IF bit=1 THEN bit=0 ELSE PRINT#8,
     k$;
```

Figure III: Changes needed to the disc version of Project Planner to make it work with an Epson compatible printer

Both the file called MODIFY and the file called DATES need altering. Most of the lines are the same, with the same line numbers in both files, but all lines are not necessarily present in each case. **Only change the line if it exists already. Do not add new lines.**

```
2538 IF ky$<>"y" AND ky$<>"Y"GOTO 2500
2888 NEXT:FOR t=1 TO 32:PRINT#8:NEXT:G
     OTO 2500
2910 FOR n=1 TO 32:PRINT#8:NEXT:GOTO 2
     500
2957 FOR n=1 TO 71-(3+2*c9):PRINT#8:NE
     XT
3000 PRINT#8,CHR$(27);CHR$(75);CHR$(6)
     ;CHR$(0);:bit=1
3390 IF sr=0 THEN PRINT#8,SPC(5):GO
     TO 3392
3397 IF bit=1 THEN bit=0 ELSE PRINT#8,
     k$;
10000 FOR n=1 TO 72-(3+2*c9):PRINT#8:N
      EXT
```

Figure IV: Changes needed to the tape version of Project Planner to make it work with an Epson compatible printer

Triptych software fixes

I have had a number of requests from people for Epson-compatible printer patches for all the Triptych programs. Unfortunately, as we have discovered with the Starwatcher and Project Planner patches, it isn't quite as simple as it might sound.

While there are similarities between the various programs, there are differences between the tape and disc versions. Hopefully over the next month or two I shall be able to provide patches for all of them.

Z88 to CPC file transfer

The Rev. Ron Simpson from Plymouth has a 6128 and a Z88 portable computer and wants to know how to transfer text and graphics files between the two. He says he has an Amstrad RS232 interface and Mini Office II, and he wants to know whether this will suffice for transferring the data.

There should be no real problems connected with transferring text files, but I would have thought it impractical to transfer any graphics because the screen formats are very different.

There are two distinct types of Amstrad RS232 interface. The earlier model was manufactured by Amstrad and had a separate mains power supply. The later version, produced by Pace for Amstrad, used power from the computer.

The Mini Office II software will *only* work with the original Amstrad interface because it made use of the routines in the original rom software. The Pace manufactured interface contains the CommStar communications software and is not usable with Mini Office II. The HoneyTerm part of the CommStar software should be quite suitable for communications with the Z88 however.

The Z88 and the CPC's RS232 interface will need connecting to each other with a suitable null modem cable made up according to the connections recommended in the RS232 manual – and, no doubt, in the Z88 manual.

The other problem will be that the Pipedream software used by the Z88 does not normally save files in pure Ascii format, although I understand it is possible to save them that way.

Pound of daisys

I have had several requests from people with daisywheel printers who are having trouble printing pound signs. There are two reasons for this. Some daisywheels don't carry a pound sign, so nothing can be done in this case. Other wheels do have one, but need a special code sequence sent to the printer.

Susan Bennett from Cornwall has such a problem because she has connected a Sharp ZX510 to her 464. I assume that the ZX510 does have a pound sign, in which case her problem is how to print it.

Some programs, such as Protext and Tasword, have facilities to re-configure codes so that when they are sent to the printer they are intercepted by the program and the correct codes substituted in their place. This is the ideal method, because it allows you to use the pound sign on screen, with the codes being sent to the printer automatically.

But Susan is using Mini Office II, and this does not have such a feature. What you can do, however, is insert the codes in the appropriate place in a document using the Insert Codes option.

This is not really ideal, because it leaves a blank space for each code sent to the printer and the codes have to be inserted every time you want to print the pound sign. My recommendation would be that if Susan wants to get the best output from her ZX510, which is why she is using it, it would be advisable to get a more sophisticated word processing program.

Choosing a printer

Anthony Bryan from Lincoln has written asking advice on his choice of printer. He is prepared to spend an amount of money that would either buy him a better quality 9 pin printer or a cheaper 24 pin model. Which would give him the better results?

I think it is fair to say that in virtually all cases the output from a 24 pin printer is better than that of a 9 pin machine. This is particularly true when talking of graphics as well as near letter quality printing. The difference in results for draft mode are relatively small.

The other big difference is that 24 pin printers are faster, requiring less passes over the paper for a given result.

Anthony also asks whether there is any benefit to be gained from using an 8 bit printer port with a 24 pin printer, or whether it may even be essential. The answer is that for normal purposes there is no need for an 8 bit port, but if he intends to generate his own download characters, then an 8 bit port will provide more flexibility in terms of the characters he can design and use.

As always, my recommendation to Anthony is to make sure he sees examples of the output from the printers he is interested in before parting with his money.

WIN the BrunWord teddy

You can't buy a better bear

ONCE upon a time there were three bears. One day in December, as they were trying to write their Christmas lists, daddy bear decided they should all go for a walk. It'll give us some ideas, he said.

So off they went into the woods. Now it just so happened that while they were out Little Red Riding Hood passed by on her way to another fairy tale. "Oh my", said Red, "whatever can that strange glow be?"

Being of an investigative nature, Red poked her nose around the bears' front door. "Oh my", said Red, "three CPC computers. Must have a go".

Red sat down at daddy bear's CPC. It was running the Protext word processor. "Ooo", said Red, "no no no – too elaborate". And she passed on to mummy bear's CPC. Here she found Tasword up and running. Red typed in a few lines and spell-checked it. Bit slow, she thought.

Sitting down at baby bear's CPC she saw an amazing sight. There on baby's green screen monitor was the BrunWord word processor displaying 128 columns *on-screen*! "Amazing!" cried Red, "I can read it quite clearly".

She started to type at the keyboard. It was so quick she couldn't stop. . .

Meanwhile the three bears were returning from their jaunt in the woods. Daddy bear was puffed as usual. "Hang on", he moaned in a low voice. Mummy and baby bear chuckled quietly to themselves as they trotted indoors. "What the. . ." said daddy bear, "somebody's been using my word processor"!

"Hmmm", smiled mummy, "mine too".

"Wow!" shouted baby bear, "somebody's been using my word processor, and because BrunWord is so quick and versatile, whoever has been using it has finished all our Christmas lists".



HOW TO WIN

He's cuddly, he's fluffy, he came from Hamleys and he won't wet the bed. Ah yes – almost forgot – and you can win him.

Him, sorry, *he* is a teddy. But he's not just any old teddy, he's the BrunWord teddy – the one in the advert, pictured on this page in real life, with his little friends, using his favourite computer and word processor.

All you need to do to stand a chance of winning the BrunWord teddy is answer the three questions below. The first correct entry out of the bag on January 31 will win.

And we'll send one of his little friends to each of the 10 runners-up.

QUESTIONS

1. If you go down to the woods today, you'd better go. . .
   (a) in a Fiat Panda (b) Inter City (c) in disguise
2. Which *ACU* scribbler has a bear called Squinty Diogenes No-nose?
   (a) Lance Davis (b) Auntie John (c) David Foster
3. How many words in the BrunWord dicshun... erm... diktion... erm... spelling checker?
   (a) 32,000 (b) 30,000 (c) 35,000

RULES

1. The winners will be the first 11 correct entries opened on January 31, 1989.
2. You may photocopy the form, but only one entry is allowed per reader.
3. Anyone found entering more than one form will have all their entries disqualified.
4. Employees of Amstrad Computer User and associated companies may not enter.
5. The editor's decision is final. (He plays with dolls, so we can trust him this time).

ENTRY FORM

1 ☐ 2 ☐ 3 ☐

Name______________________________

Address______________________________

____

________________ Tel:________________

Send to: BrunWord Competition, Amstrad Computer User, 169 Kings Road, Brentwood, Essex, CM14 4EF.

☐ Tick this box if you **do not** want details of Brunning Software products sent to you.



Santa Claus Kidz

Get into the festive spirit with this seasonal game for the CPC by Alastair Scott



IT is a hard life these days. Employers want qualifications and Santa will lose his job if he cannot produce some, leaving everybody without presents on Christmas Day. Eating the goodies that are left beside fireplaces each year has taken its toll as well – Santa is getting stuck going down chimneys.

Our practical friend has decided to take care of both problems by brushing up on his arithmetic and losing weight at the same time.

The challenge in Santa Claus Kidz is a maze with sacks of presents scattered around. Santa has to rush about collecting as many sacks as possible. Each has a number printed on it, and the total at the top middle of the screen is altered depending on the number and what arithmetic sign is at the top left.

For example, if the bag is numbered 9, the current total is 13 and the sign is +, the new total would be 22 (9 + 13). Once the total exactly matches the target score at the top right of the screen, Santa gives out some of his presents and moves on to the next level.

To add to his troubles, Santa was forced to park his sleigh on double yellow lines before entering the maze. The police have seen it, and are towing it away. They take two minutes to do this. If Santa matches the target score before the sleigh vanishes, he can get it back and continue the game. If he doesn't . . .

Control Santa using the cursor keys or a joystick. And have a very Merry Christmas!

The figures in the left hand column of the listing below show it has been checksummed by **ACU Proofreader**, the real-time type-in tester published in this issue of *Amstrad Computer User*. You don't need **ACU Proofreader** to be able to run this listing, but having it makes spotting typing errors very easy.

```
[81] 1000 'Santa Claus Kidz
[85] 1001 'By Alastair Scott
[89] 1002 '
[94] 1010 POKE 300,0:POKE 301,0
[D4] 1020 DEFINT a-z
[72] 1030 GOSUB 2060
[B7] 1040 GOSUB 1660
[D5] 1050 GOSUB 1770
[BB] 1060 GOSUB 1840
[DB] 1070 EVERY 50 GOSUB 1840
[0B] 1080 EVERY 500,1 GOSUB 1660
[7E] 1090 EVERY del,2 GOSUB 1770
[99] 1100 AFTER 6000,3 GOSUB 1910
[38] 1110 RANDOMIZE TIME
[1A] 1120 high=PEEK(300)+256*PEEK(301)
[A3] 1130 total=FNnum(RND*25*lev,25*le
     v)
[9F] 1140 x=11:y=12:dir=1:ti=120:score
     =1
[2E] 1150 PEN 2:PRINT CHR$(30)"SIGN
     TOTAL  TARGET":PEN 1
[B5] 1160 LOCATE 16,2:PRINT FNsc$(tota
     l,4)
[9D] 1170 LOCATE 9,2:PRINT FNsc$(score
     ,4)
[4C] 1180 WHILE score<>total
[D5] 1190 DI
[87] 1200 INK 11,FNhue:INK 12,FNhue
[D0] 1210 INK 13,FNhue:INK 14,FNhue
[52] 1220 PEN 3:LOCATE x,y:PRINT CHR$(
     239+dir)
[82] 1230 IF INKEY(0)=0 OR INKEY(72)=0
      THEN dir=1:dx=0:dy=-1
[03] 1240 IF INKEY(8)=0 OR INKEY(74)=0
      THEN dir=2:dx=-1:dy=0
[4D] 1250 IF INKEY(2)=0 OR INKEY(73)=0
      THEN dir=3:dx=0:dy=1
[A4] 1260 IF INKEY(1)=0 OR INKEY(75)=0
      THEN dir=4:dx=1:dy=0
[B2] 1270 IF dx=0 AND dy=0 OR MID$(maz
     e$(y+dy),x+dx,1)="%"THEN 1310
[BC] 1280 LOCATE x,y:PRINT" "
[EE] 1290 x=x+dx:y=y+dy
[5B] 1300 LOCATE x,y:PRINT CHR$(239+di
     r)
[C7] 1310 EI
[D0] 1320 FOR a=1 TO 8
[8B] 1330 IF c(a)=0 OR x<>x(a)OR y<>y(
     a)THEN 1420
[81] 1340 target=c(a)
[CB] 1350 SOUND 130,100,40,15,,2
[A3] 1360 IF op$="-"THEN score=score-t
     arget
[4A] 1370 IF op$="+"THEN score=score+t
```

```
    arget
[05] 1380 IF op$="/"THEN score=score/t
    arget
[22] 1390 IF op$="*"THEN score=score*t
    arget
[2C] 1400 score=ROUND(MIN(MAX(score,0)
    ,999)):c(a)=0
[92] 1410 PEN 1:LOCATE 9,2:PRINT FNsc$
    (score,4)
[FA] 1420 NEXT
[53] 1430 WEND
[C2] 1440 CALL &BCA7
[BF] 1450 FOR a=0 TO 3:re=REMAIN(a):NE
    XT
[14] 1460 RESTORE 2670
[32] 1470 FOR a=1 TO 14
[66] 1480 READ dur,note
[50] 1490 SOUND 1,note,dur*16,12
[5A] 1500 SOUND 2,note+1,dur*16,12
[58] 1510 SOUND 1,0,2,0:SOUND 2,0,2,0
[FC] 1520 NEXT
[C7] 1530 WHILE SQ(1)XOR 4:WEND
[21] 1540 WINDOW SWAP 1
[69] 1550 WINDOW 1,20,6,18:PEN 1:PAPER
     9:CLS
[85] 1560 bonus1=score*lev:bonus2=2*ti
    *lev:tscore=tscore+bonus1+bonus2
[1B] 1570 LOCATE 2,2:a$="LEVEL BONUS
    "+FNsc$(bonus1,5):CALL &8000,@a$
[7C] 1580 LOCATE 2,5:a$="TIME BONUS
    "+FNsc$(bonus2,5):CALL &8000,@a$
[D1] 1590 LOCATE 2,8:a$="TOTAL SCORE
    "+FNsc$(tscore,5):CALL &8000,@a$
[0E] 1600 PEN 10:LOCATE 4,11:a$="PRESS
    ANY KEY!":CALL &8000,@a$
[1A] 1610 WINDOW SWAP 1
[DC] 1620 WHILE INKEY$<>"":WEND:CALL &
    BB18
[8A] 1630 lev=lev+1
[7D] 1640 GOSUB 2420
[55] 1650 GOTO 1040
[04] 1660 DI:SOUND 132,0,0,0,4,,FNnum(
    31,1)
[E5] 1670 FOR a=1 TO 8
[1C] 1680 xp=x(a):yp=y(a)
[8D] 1690 IF RND>0.75 THEN 1750
[C5] 1700 c(a)=INT(RND*9)+1
[7A] 1710 LOCATE xp,yp:PEN FNnum(5,5):
    PRINT CHR$(244)
[87] 1720 CALL &BB9F,1
[4A] 1730 LOCATE xp,yp:PEN FNnum(4,11)
    :PRINT CHR$(244+c(a))
[4C] 1740 CALL &BB9F
[09] 1750 NEXT
[C8] 1760 EI:RETURN
[8C] 1770 DI:SOUND 130,4*ti,0,0,3
[29] 1780 IF NOT flag THEN op=FNnum(10
    ,1)ELSE op=1:flag=0
[F0] 1790 op$=MID$(oper$,op,1)
[F5] 1800 et=INSTR("+-*/",op$)+3
[AA] 1810 SOUND 130,200,0,0,3,et
[27] 1820 PEN 1:LOCATE 2,2:PRINT op$
[C1] 1830 EI:RETURN
[8B] 1840 DI:ti=ti-1
[F2] 1850 ORIGIN 0,0,600-5*(120-ti),64
    0,6,6:CLG 0
[73] 1860 ORIGIN 0,0,0,5*ti,6,6:CLG 3
[4F] 1870 CALL &BBBA:MOVE 5*ti-4,16
[19] 1880 TAG:PRINT CHR$(254)CHR$(255)
    ;:TAGOFF
[48] 1890 SOUND 129,4*ti,32767,3,,1
[BA] 1900 EI:RETURN
[8F] 1910 SOUND 135,0,0,15,2,,20
[C0] 1920 FOR a=0 TO 3:re=REMAIN(a):NE
    XT
[24] 1930 WHILE SQ(1)XOR 4
[21] 1940 col=FNhue:CALL &BD19:BORDER
    col:INK 0,col
[63] 1950 WEND
[0B] 1960 MODE 0:INK 0,0:INK 1,24:INK
    2,18:INK 3,14:INK 4,6:BORDER 0
[BB] 1970 PEN 1:LOCATE 3,6:a$="FINAL S
    CORE "+FNsc$(tscore,5):CALL &8000
    ,@a$
[49] 1980 PEN 2:IF tscore>high THEN hi
    gh=tscore:LOCATE 3,9:a$="A NEW HI
    GH SCORE!":CALL &8000,@a$:POKE 30
    0,high MOD 256:POKE 301,high\256
[79] 1990 PEN 3:LOCATE 3,12:a$="HIGH S
    CORE  "+FNsc$(high,5):CALL &8000,
    @a$
[4F] 2000 PEN 4:LOCATE 2,16:a$="Anothe
    r game? (Y/N)":CALL &8000,@a$
[EB] 2010 WHILE INSTR("*YN",k$)<2
[C7] 2020 k$=UPPER$(INKEY$):CALL &BD19
    :INK 2,FNhue
[4C] 2030 WEND
[21] 2040 IF k$="N"THEN END
[82] 2050 RUN 1020
[04] 2060 SYMBOL AFTER 256:MEMORY &7FF
    F:SYMBOL AFTER 32
[E1] 2070 ENT-1,3,3,3,3,-3,3:ENT-2,10,
    -2,1
[1E] 2080 ENT-3,4,-20,1,4,10,1
[25] 2090 ENT-4,1,3,3,1,-6,3
[23] 2100 ENT-5,1,-3,3,1,6,3
[05] 2110 ENT-6,10,-4,1:ENT-7,10,4,1
[F7] 2120 ENV 1,15,-1,1:ENV 2,15,-1,15
[CB] 2130 ENV 3,10,-1,5:ENV 4,1,1,14,1
    5,-1,1
[08] 2140 SYMBOL 240,24,60,24,60,126,1
    26,36,102
[88] 2150 SYMBOL 241,12,30,12,62,127,6
    2,18,102
[6E] 2160 SYMBOL 242,24,36,24,60,126,1
    26,36,102
[C6] 2170 SYMBOL 243,48,120,48,124,254
    ,124,72,102
[8D] 2180 SYMBOL 244,1,14,62,127,255,2
    55,126,56
[9F] 2190 SYMBOL 245,0,0,24,8,8,8,28
[32] 2200 SYMBOL 246,0,0,28,4,28,16,28
[91] 2210 SYMBOL 247,0,0,28,4,28,4,28
[07] 2220 SYMBOL 248,0,0,20,20,28,4,4
[5F] 2230 SYMBOL 249,0,0,28,16,28,4,28
[33] 2240 SYMBOL 250,0,0,28,16,28,20,2
    8
[DB] 2250 SYMBOL 251,0,0,28,4,4,4,4
[D9] 2260 SYMBOL 252,0,0,28,20,28,20,2
    8
[A1] 2270 SYMBOL 253,0,0,28,20,28,4,28
[27] 2280 SYMBOL 254,0,0,0,0,16,95,72,
    63
[7F] 2290 SYMBOL 255,0,12,28,60,124,25
    2,16,252
[4E] 2300 SYMBOL 37,238,0,221,0,187,0,
    119
[1A] 2310 DEF FNsc$(a,b)=STRING$(b+1-L
    EN(STR$(a)),48)+MID$(STR$(a),2)
[D4] 2320 DEF FNnum(a,b)=INT(RND*a)+b
[8B] 2330 DEF FNhue=INT(RND*26)+1
[ED] 2340 DIM maze$(25):oper$="++++---
    **/"
[9D] 2350 tscore=0:lev=1
[33] 2360 RESTORE 2690
[B8] 2370 FOR addr=&8000 TO &8045
[4D] 2380 READ byte$:bt=VAL("&"+byte$)
[2E] 2390 POKE addr,bt:ch=ch+bt
[F5] 2400 NEXT
[0C] 2410 IF ch<>7727 THEN PRINT"ERROR
     in lines 2690-2750":END
[47] 2420 MODE 0:BORDER 0:LOCATE 7,10:
    PEN FNnum(5,5)
[94] 2430 ti=120:flag=-1:del=200-15*le
    v
[CF] 2440 RESTORE 2630
[FD] 2450 FOR a=0 TO 12
[86] 2460 READ hue1,hue2:INK a,hue1,hu
    e2
[0A] 2470 NEXT
[11] 2480 a$="LEVEL"+STR$(lev):CALL &8
    000,@a$
[42] 2490 FOR a=1 TO 5000:NEXT
[54] 2500 CLS:PEN 4:LOCATE 1,3
[E8] 2510 RESTORE 2650
[D5] 2520 FOR a=1 TO 8
[2C] 2530 READ x(a),y(a)
[03] 2540 NEXT
[13] 2550 RESTORE 2760
[1F] 2560 FOR a=1 TO 22
[A5] 2570 READ col$
[D9] 2580 maze$(a+2)=col$
[8E] 2590 PRINT col$;
[F9] 2600 NEXT
[2A] 2610 INK 4,15
[6E] 2620 RETURN
[0F] 2630 DATA 0,0,26,26,19,19,6,6,0,0
    ,7,7
[D8] 2640 DATA 24,24,18,18,10,10,2,2,2
    6,9,0,0,0,0
[51] 2650 DATA 2,4,17,6,4,21,15,19
[73] 2660 DATA 10,12,13,17,19,23,6,8
[E3] 2670 DATA 2,213,2,127,1,127,1,119
    ,1,127,1,142,2,159
[03] 2680 DATA 2,190,1,213,1,213,2,190
    ,2,142,2,169,4,159
[1D] 2690 DATA eb,46,23,5e,23,56,eb,7e
    ,c5,e5
[D8] 2700 DATA cd,12,80,e1,c1,23,10,f5
    ,cd,a5
[CA] 2710 DATA bb,06,08,11,44,80,7e,12
    ,13,12
[DB] 2720 DATA 13,23,10,f8,3e,ee,21,44
    ,80,cd
[D9] 2730 DATA a8,bb,3e,ef,21,4c,80,cd
    ,a8,bb
[35] 2740 DATA 06,05,21,3f,80,7e,cd,5a
    ,bb,23
[92] 2750 DATA 10,f9,c9,ee,0a,08,ef,0b
    ,00,00
[0C] 2760 DATA %%%%%%%%%%%%%%%%%%%%
[A5] 2770 DATA %                  %
[70] 2780 DATA % %%%%%%%  %%%%%%% %
[8B] 2790 DATA % %              % %
[62] 2800 DATA % % %%%%%%%%%%%% % %
[7D] 2810 DATA % % %          % % %
[D0] 2820 DATA % % % %%%  %%% % % %
[B3] 2830 DATA % % % %      % % % %
[D4] 2840 DATA % % % % %%%% % % % %
[11] 2850 DATA % % % % %  % % % % %
[8C] 2860 DATA % %   %      %   % %
[8F] 2870 DATA % %   %      %   % %
[1A] 2880 DATA % % % % %  % % % % %
[E3] 2890 DATA % % % % %%%% % % % %
[AC] 2900 DATA % % % %      % % % %
[CF] 2910 DATA % % % %%%  %%% % % %
[82] 2920 DATA % % %          % % %
[6D] 2930 DATA % % %%%%%%%%%%%% % %
[80] 2940 DATA % %              % %
[6B] 2950 DATA % %%%%%%%  %%%%%%% %
[A6] 2960 DATA %                  %
[13] 2970 DATA %%%%%%%%%%%%%%%%%%%%
```

CPC COMPUTING BACK ISSUES

A bundle of fun!

SAVE OVER £8!

Here's your chance to collect all the 1988 issues of* CPC Computing / Computing with the Amstrad CPC *in a bargain bumper bundle. For the cost of a book you'll get a total of more than 700 pages. And they're packed with games and utility listings, reviews and tutorials. But the best news is the price – only £9.95 for 12 issues! Can you afford to miss this great offer?

March
Bankmanager (part 2). Reviews: Easi-Draw vs Cherry Paint (Mode 2 drawing packages). Utility: Pixelator – superb Mode 0 pixel editor. Game: Meltdown – unusual two-player board game.

April
DIY Disc Drive (part 1) – build a second disc drive for £50. Bank Manager (part 3). Dizzy Map Game: Cube Wars – Q-bert style arcade action. Utilities: Disc Indexer – database of disc filenames. Supershift – useful enhancement for Protext. Reviews: Axis – CP/M comms package, Genny – genological database.

May
DIY disc drive (part 2). Reviews: Cage ROM (comms program), Micro Design (DTP), Maxam 1.5 (assembler). Game: Scramble – tough block puzzle. Utilities: Fast disc formatter, multisize screen dump, data generator, Stop Press fast page printer for old Shinwa/MT type printers.

June
Joysticks tested. Sort it out – part 1 of series on data sorting. Reviews: Protext Office (invoice/database for Protext), Graduate CP/M Plus rom. Game: ICBM Defender – save the USA. Utilities: Basic line mover, Multiface screen processor.

July
Utility: Letter Head Designer Reviews: Pyradev+ (assembler), Ramdos vs Rodos with 5.25in disc drive. Game: Newmarket – the popular card game. Sort it out (part 2)

August
Animated 3D Graphics. Joybox – construction project. Fast machine code techniques. Game: House of Spiders Reviews: PEP (personality/IQ tests), Micro Music Creator, KDS Screenmaster. Utility: Fast string array sorter.

September
Reviews: Hackit (hardware hacking device), Infoscript (integrated WP/database/mailmerge), Small Traders' Pack. Listings: Fancy Text (utility), Surakarta (board game), Checksum version II.

September
Writing a database part I. Reviews: Hackit (hardware hacking utility), Infoscript (integrated WP/database), Small Traders' Pack. Listings: Fancy Text (extra screen fonts), Surakarta (strategic board game), Checksum (for use with Get it Right numbers).

October
Designing and controlling sprites part I. Database part II. Reviews: Personal Banking, Propunter, Thompson Promerge Tutorial, rom boxes. Listings: Maxam upgrade, Cubots (arcade adventure).

November
Sprites part II. Ascii codes explained. Reviews: Duette (musical accompanist), which word processor? Listings: Advanced Art Studio and Micro Design utilities.

December
CP/M machine code programming, delights of C. Reviews: GM Chess, Graduate CP/M V2, SD General Ledger, Goldmark products. Listings: Mini adventure creator, Amsdos disc file copier, Rubik's Clock solver, Santa's Dungeon.

Turn to Page 73 to order your back issues

Turn on to teletext

Phil Craven gets tuned in with a couple of boxes that provide him with free information, day and night

IT has now been more than a year since my teletext TV gave its final performance. Since then I've often felt to be out of things, not being able to read up-to-the-minute news and sports reports at will. I was therefore delighted to get hold of a Microtext Teletext Adaptor and get stuck into all the things I'd missed.

Once again I could keep tabs on obscure golf tournaments and page the football league tables in blissful optimism that my team was leading the pack.

Once again I could consult the business pages to gloat over the bad performances of the shares I had chosen not to buy, trying to convince myself that I can't be wrong all the time.

The adaptor responsible for my feelings of failure is the only product that Microtext produces. It is attractively housed in a sturdy, black plastic box and plugs into the expansion port of a 664/6128, or the disc drive port on a 464. Its through connector allows for the addition of further expansions.

Supplied with the unit is a lead to connect it to a video recorder, software on tape, and an easy-to-follow instruction book. Provided a video recorder is available, this is all that is needed to put the four BBC and ITV teletext channels on your monitor screen. Without a video recorder, the additional tuner unit is necessary.

The point I need to make here is that teletext signals are transmitted with each TV channel. The only way to decode and use them is via TV tuners and all video recorders have their own built-in tuners to allow the recording of one channel while watching another.

Microtext has cleverly designed its unit in two parts, allowing video owners to make use of their recorder's tuners, thereby keeping the cost down.

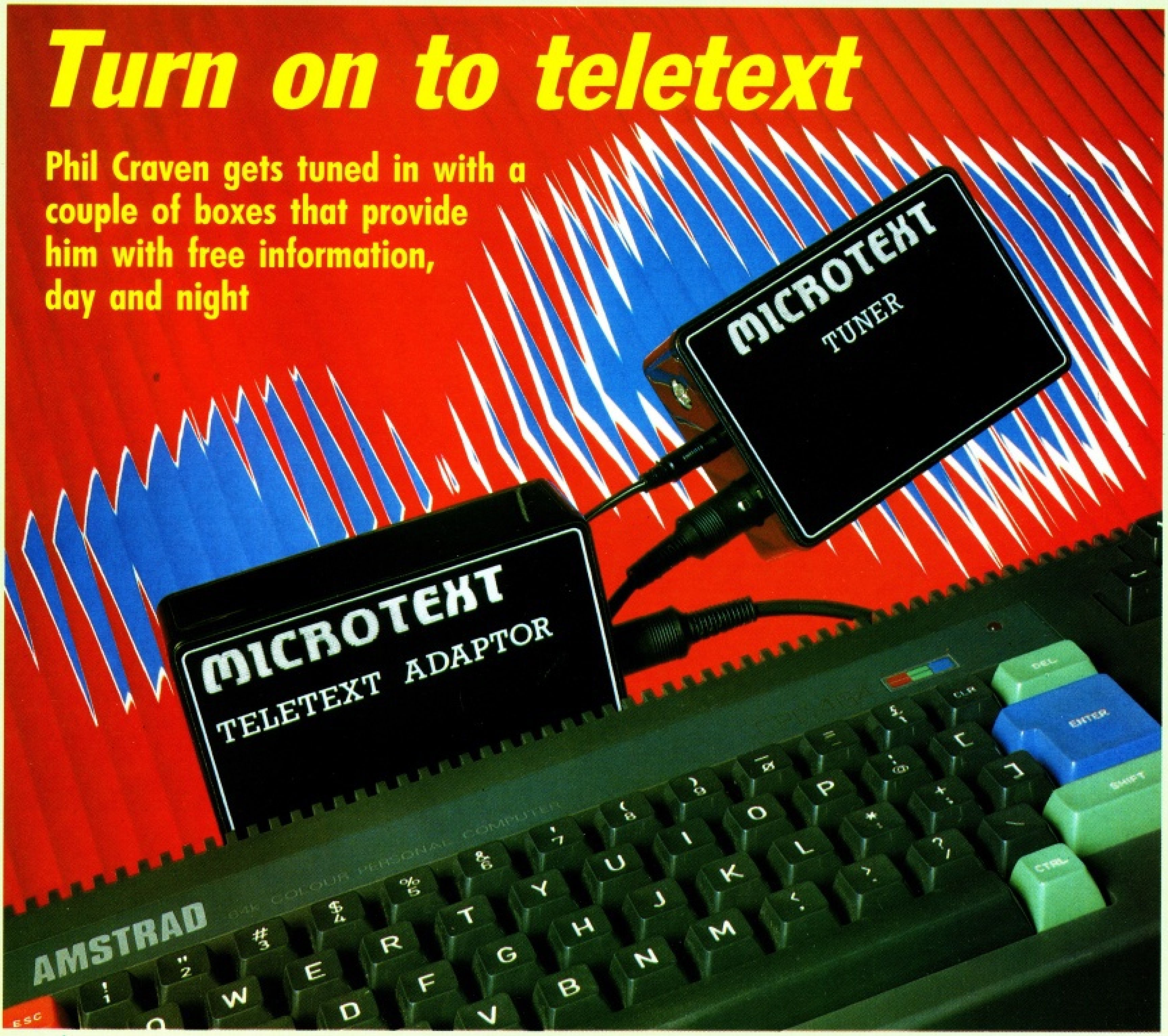
For those who don't own a video, or who prefer their computer and video to be separate, the tuner unit – which looks very much like the teletext unit – is available with connecting lead and power supply. It is fed from the outside aerial and screens are not included.

Terry Cassell of Microtext explained that syn-up to 16 channels are available.

Conspicuous by their absence are tuning knobs – the unit is totally self-tuning. Once the initial tuning procedure has been implemented, the settings can be saved to disc or tape. From then on typing *RUN"teletext* will put the first teletext screen up in a matter of seconds.

If used alone, the adaptor must be fed from the Video Out socket of a video recorder, and the teletext channel is selected by the recorder's channel selector. If a video is either unavailable or undesirable the tuner unit must be used, in which case an aerial splitter will be needed if both teletext and TV are needed at the same time. This can be bought from most TV shops for £2 to £3.

Most of the features on teletext TVs are available on Microtext's adaptor, but there are some exceptions – subtitles and double height half-



chronisation of the two signal sources – the CPC for the teletext and the TV for the picture – would be either impossible or prohibitively expensive. He also pointed out that since most people would not be using the adaptor with a TV but with a monitor, subtitles would not be needed.

On the double height half-screen – a facility for those with poor eyesight which displays half the screen at a time in double height characters – Terry said that since most users would be sitting close to a monitor and would be quite used to reading monitor-type text, this facility would also not be needed. I agree on both counts.

There are a couple of other omissions, the alarm facility for one, but again they have no real use in the computer set up.

Designer letters

I was a wee bit disappointed when I saw the on-screen character set. At first I couldn't understand why Microtext had chosen to dispense with the CPC character set in favour of an inferior design.

The reason is that teletext uses eight on-screen colours, whereas the CPC will allow only four colours in Mode 1, so Mode 0 had to be used.

The characters were designed using the larger Mode 0 pixels, yet still occupying Mode 1 screen space. The resulting set can never be as good as the normal Mode 1 set, but is quite adequate, and you soon get used to it.

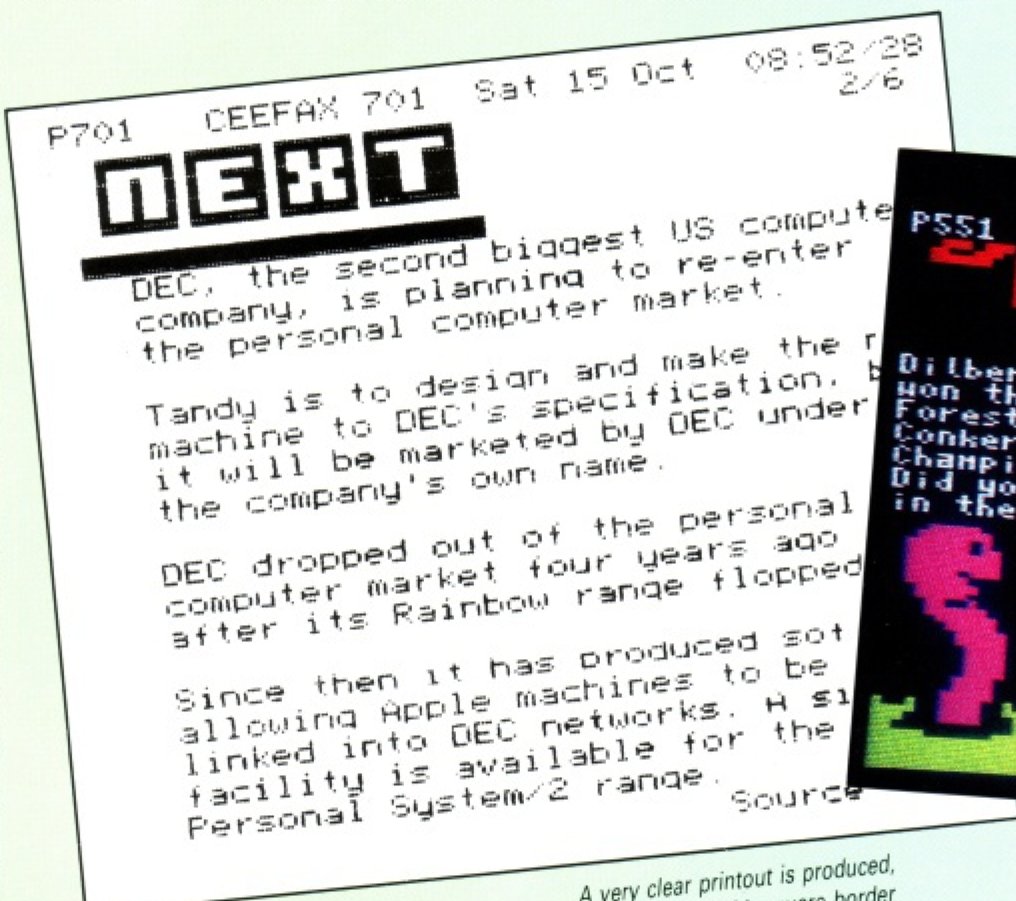
Having brought up the subject of colour, I should mention that I have tried the adaptor on a green screen monitor, and although some colours are rather dull – the brightness needs to be turned up – I didn't find any colour mixes that make text disappear from view.

I can't say it will never happen – in fact Phil's first law of wires and teletext adaptors, which states that "If it can, it will", almost certainly applies – but the chances of finding disappearing text, or rather not finding text, seem to be slim.

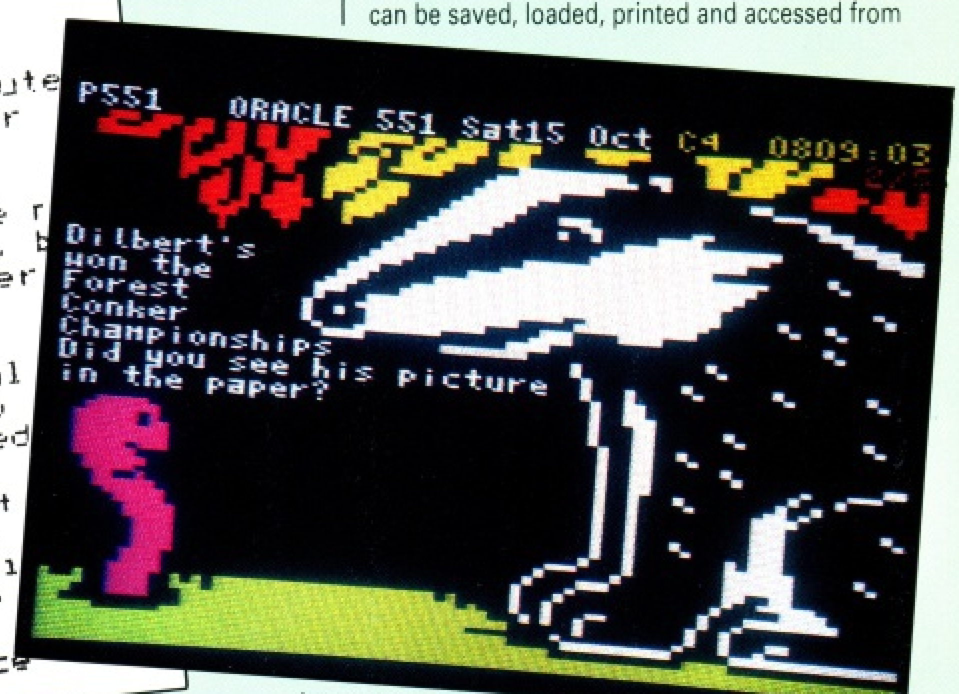
So we've seen how things compare with a teletext TV, but this adaptor is connected to a computer, and the computer has memory in which to store the Teletext data. If the data is in memory, it can be saved, loaded, printed and accessed from



Telecred, the teenage magazine on Ceefax



A very clear printout is produced, complete with square border



A lot of care and attention go into the artwork and stories on Oracle's kiddie pages



The jokes may be corny, but Oracle's Buzz magazine keeps reaping them in

another program. Now we're reaching parts that other teletext devices cannot reach.

OK, so we can't mix pictures and text. But we can do a whole lot more. By pressing S and entering a filename the screen currently on display will be saved to disc or tape. Conversely, pressing L and a filename will load a screen. Pressing P will send the screen to the printer.

You might think that up to eight colours being printed out in shades of grey would produce a very unsatisfactory result, but this is not the case. The print routine sends a modified screen to the printer so that a very clear printout is produced on Epson compatible printers.

A special printer driver is available, at no extra cost, for the DMP1 printer. All good stuff, eh? And there's more.

The software has been designed to allow easy access to teletext from within a computer program with the adaptor's documented machine code subroutines. And it is quite conceivable that a program could be written to analyse such things as stock market trends, weather cycles and football results. Two examples of Basic programs that make use of the software are given in the manual.

The teccy bit

One thing I would like to dispose of straight away is the fact that the adaptor does not rest on the desk when plugged into the computer. I have raised this subject in a previous review of the Microgenic Systems rom board, when I wondered if a clumsy person might manage to break the computer's main board by accidentally pressing down on such units.

The answer is no. I did a test with a 464 main board and a home-made rom board. The only thing to break was the rom board's edge connector, which broke in such a way that it could still be used.

Furthermore, the weight I had to apply before it snapped was enormous – about equal to a falling adult using the unit to stop the fall. I am now convinced that the risk of damage to either computer or add-on by this "hang it on the back" method is so tiny as to be not worth considering.

The alternative would be for manufacturers to make different sized models for the different sized CPCs, like the Dk'tronics stuff, and that would put up the cost.

The teletext system uses a 1k screen. Even though memorywise this is not very much, the adaptor has its own 2k ram chip built into it for screen storage. I presume this is to leave the CPC's memory free for those massive teletext accessing programs that we'll all be writing.

Each screen uses just 2k of disc space, allowing 64 screens to be saved on one side of a disc. 89 screens, did I hear you say? No way. Only 64 entries to a directory, chums.

The printed circuit boards of both units have good ground plane areas, aiding reliability, and make use of the 74LS series logic chips to avoid any user damage which might be caused by static electricity.

I was pleased not to find a rom in the adaptor, which would use up a valuable rom slot. Not because the use of slots by add-ons is undesirable, quite the opposite, but because when used with the tuner, channel settings for a particular area have to be tuned and saved to disc or tape. Since some of the software must, therefore, be on disc or tape, it is better that all of it is.

The two metre video lead supplied with the adaptor will fit the usual BNC Video Out connector, which looks a bit like the metal part of a small bayonet type light bulb. Alternative connectors are available from Microtext at no extra cost, as are longer leads at 50p a metre. The tape software is easily transferrable to disc, but it can be bought supplied on disc for an additional £5.

The verdict

I would like to sum up both negative and positive aspects of the two units, but I can't really find much in the way of negative ones. I've never tried to design a Mode 1 type character set with Mode 0 pixels, so I dare not suggest that it could be better.

The omitted teletext features are not really desirable anyway in a computer setup, and I can't even quibble at the price. At £74.95 the adaptor unit is cheaper than the £80 difference between a standard 22in TV set and the same set with teletext.

Although it takes a little time to turn the computer on and load the software, the additional features provided by Microtext's Teletext Adaptor, such as printouts and saving screens, are a great improvement over the old fashioned method of receiving teletext through a TV set.

The tuner unit is slightly different. It is neat, compact and performs its task admirably. It is also £49.95. These days second-hand video recorders are going for that sort of price. They are not as neat and compact, and they will not last forever, but they do have suitable tuners. Food for thought?

Quick tip: A video's recording quality tends to deteriorate before its playback quality so, if you're buying one, see it record.

Finally, I should mention that I have found one rom with which the system doesn't fully operate. This is not a fault of either rom or teletext adaptor, but a common occurrence when different programs want to use the same area of memory. The problem is easily solved by switching the rom off.

The units cost £74.95 (adaptor only) or £129.90 (adaptor and tuner). They are available from Microtext, 7 Birdlip Close, Horndean, Hants, PO8 9PW. Tel 0705 595694.

AMSTRAD *Computer User*

EXCLUSIVE READER OFFER

A·C·U A·N·T·H·O·L·O·G·Y

These two exciting compilations bring together the very best games listings which have helped to make *Amstrad Computer User* the best-selling Amstrad magazine in the country. And we've kept the price down to thank you our readers, for all your encouragement and support.

V·O·L·U·M·E 1



Roland Takes a Running Jump



Racer

13 GAMES!

Roland Takes a Running Jump
A colourful fast-action ladders and levels game which developed from the highly-praised series of articles on writing your own arcade game. Includes extra screen data.

Racer
Get behind the wheel of this Grand Prix racing car and take it for a spin round the tortuous test track. A nifty bit of programming.

PLUS

Life, Electric Eddy, Galaxians' Revenge, Trench Attack, 3D Maze, Missile Attack, Monsters Final Hour, Up the Beanstalk, Amthello, Frantic Freddie and Electric Fencing

V·O·L·U·M·E 2



Space Mania



Splatch

20 GAMES!

Space Mania
This machine-code megaprogram is worth the price of the compilation on its own. There's loads of screens to negotiate in a ladders and platforms extravaganza.

Splatch
Think you've seen this one before? Balderdash, we reply. Help the rabbit get to the carrots, and don't forget to drop an acorn on the squirrels. Great frun for all the family.

PLUS

Duck Dodgers, Rock Hopper, Froggie, Crazy Legs, Double Trouble, Up Up and Away, N-Sub, Pac-Caverns, Moonbase Alpha, Beat the Clock, Pinball, Battle of the Cars, Quoite, Sniper, Combat, Plumberdroid, Crawler (6128 only) and Frootee.

Tape (Each volume comes on two casettes) **£7.95**
Only £2.95 with a new subscription or subscription renewal

Disc **£9.95**
Only £3.95 with a new subscription or subscription renewal

All games work on Amstrad CPC 464, CPC 664 and CPC 6128 computers unless stated otherwise. You can list and adapt all the Basic files – an excellent way to improve your programming skills.

TO order please use the form on Page 73

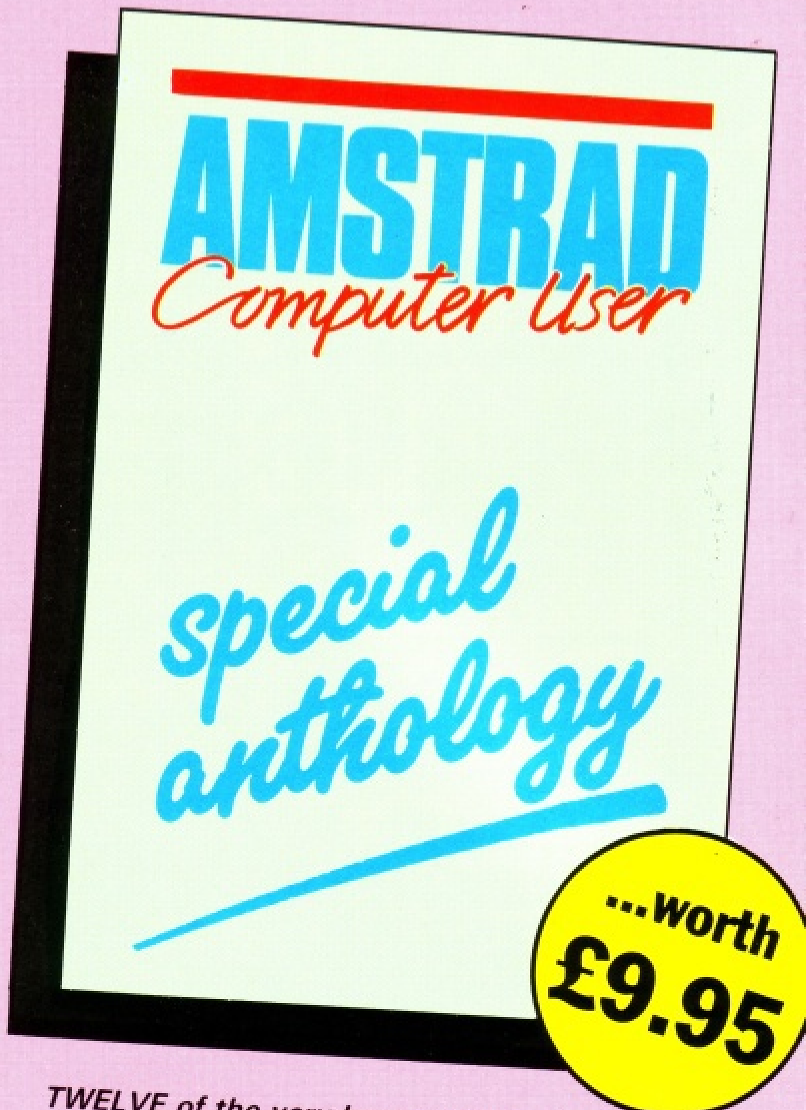
All these FREE! When you subscribe to

AMSTRAD Computer User

SAVE OVER £20!

When you take out a yearly subscription to ACU for just £16.50, we'll mail you the next 13 issues – before they reach the newsagents – PLUS a smart ACU binder to keep them in and an exclusive ACU/CPC Computing special anthology containing the best programs to have been published in both magazines. ***That comes to a massive saving of £16.15!***
However, if you take out an 18 month subscription for just £20 – saving AN EXTRA £4 – we'll send you all these goodies plus the next 18 issues.

So send for your subscription today and get your copies of ACU delivered regularly... and save pounds into the bargain!



TWELVE of the very best action-packed games, taken from the pages of ACU and CPC Computing: This compilation is ONLY available to subscribers.

Eggstatic – Raid the seven caverns of the egg mine by digging through soil

Roland takes a running jump – A colourful, fast-action ladders and levels game

Diamond Digger – Navigate the droids through the mines, avoiding falling rocks

Racer – Get behind the wheel of this Grand-Prix racing car and take it for a spin round the tortuous test track

Hungry Snappers – Guide the Doodlebug to safety while eating up the truffles

Amthello – Hard to beat version of the popular board game, Othello

Ayo – Bring the ancient African board game to life

Space Mania – This machine code game has loads of screens to negotiate in a ladders and platforms extravaganza

Patience – Try your hand at this popular card game, without the faff of real cards

Crazy legs – Unique fast-action strategy game

Roulette – Place your bets, ladies and gentlemen, with this realistic simulation

Duck Dodgers – Arcade spoof of the Buck Rogers films



AMSTRAD *Computer User*

Binder

These handsome burgundy binders, embossed with the ACU logo, will keep your magazines in pristine condition, using a system of metal rods to hold them firmly in place.

...worth £4.95

13 issues for the price of 12

That's right! You get an extra issue with a yearly subscription.

Or you can take out an 18 month subscription and pay for only 16.

That's an extra two issues of your favourite magazine, absolutely free!

Subscribe using this form (or a photocopy) to obtain your free gifts

---

Offers subject to availability

All prices include postage, packing & VAT.

AMSTRAD *Computer User*

ORDER FORM

All Overseas items despatched by air mail

Valid to 31.1.89

(✔) £p

UK subscriptions to ACU

Includes 13 issues, binder & special anthology NEW

Yearly subscription			New	Renewal
With Anthology on tape	£16.50	*8201/8205*		
Special Anthology on disc	£16.50	*8200/8204*		

18 month subscription			New	Renewal
With Anthology on tape	£20	*8203/8207*		
Special Anthology on disc	£20	*8202/8206*		

Europe, Eire and Overseas subscriptions to ACU

Yearly subscription			New	Renewal
Europe & Eire	£25	*8001/8812*		
Overseas	£40	*8002/8813*		

All 12 CPC Computing 1988 back issues *(see page 66)* NEW

Add £6 Europe and Eire/£18 Overseas	£9.95	*8176*	

Fun School II *(see page 60)* NEW

		Tape £9.95	Disc £12.95
Under 6	*8184/8185*		
6 to 8	*8186/8187*		
Over 8	*8188/8189*		

Add £1 Europe and Eire/£2 Overseas

Mini Office II plus all three Fun School I *(see page 24)* NEW

Tape	£19.95	*8174*	
Disc	£29.95	*8175*	

Add £3 Europe and Eire/£7 Overseas

Mini Office II

Tape	£14.95	*8182*	
Disc	£19.95	*8183*	

Add £2 Europe and Eire/£5 Overseas

Lancelot

Tape	£14.95	*8180*	
Disc	£19.95	*8181*	

ACU Anthology *(see page 71)*

Volume 1 Tape	£7.95	*8161*	
Volume 2 Tape	£7.95	*8163*	
Volume 1 Disc	£9.95	*8162*	
Volume 2 Disc	£9.95	*8164*	

Utilities Unlimited *(see page 24)*

Tape	£7.95	*8165*	
Disc	£9.95	*8166*	
Pack of information sheets	£4.95	*8172*	

Hotshot *(see page 58)* NEW

Tape	£7.99	*8177*	
Disc	£11.99	*8178*	

Back issue bundles of ACU

January to June 1988	£4.95	*8179*	
July to December 1988	£4.95	*8190*	

Add £3 Europe & Eire/£9 Overseas

ACU binders *(see opposite)*

Add £3 for Europe & Eire/£7 for Overseas	£4.95	*8106*	

Screen filter *(see page 58)* SAVE £5

Colour Monitor	£9.95	*8173*	

Add £2 for Europe & Eire/£5 for Overseas

Readers in Europe (inc. Eire) & Overseas please add £2 per item unless otherwise indicated

TOTAL

Send to: Database Publications, FREEPOST, Macclesfield, Cheshire SK10 4YB

(No stamp needed if posted in UK) *Please allow up to 28 days for delivery*

Order at any time of the day or night

Credit Card holders phone: **0625 879920**

Fax Orders: **0625 879966**

Orders by Prestel: **Key *89, then 614568383**

MicroLink/Telecom Gold **72:MAG001**

Don't forget to give your name, address and credit card number

Please indicate method of payment (✔)

☐ Access/Mastercharge/Eurocard/Barclaycard/Visa

Expiry date /

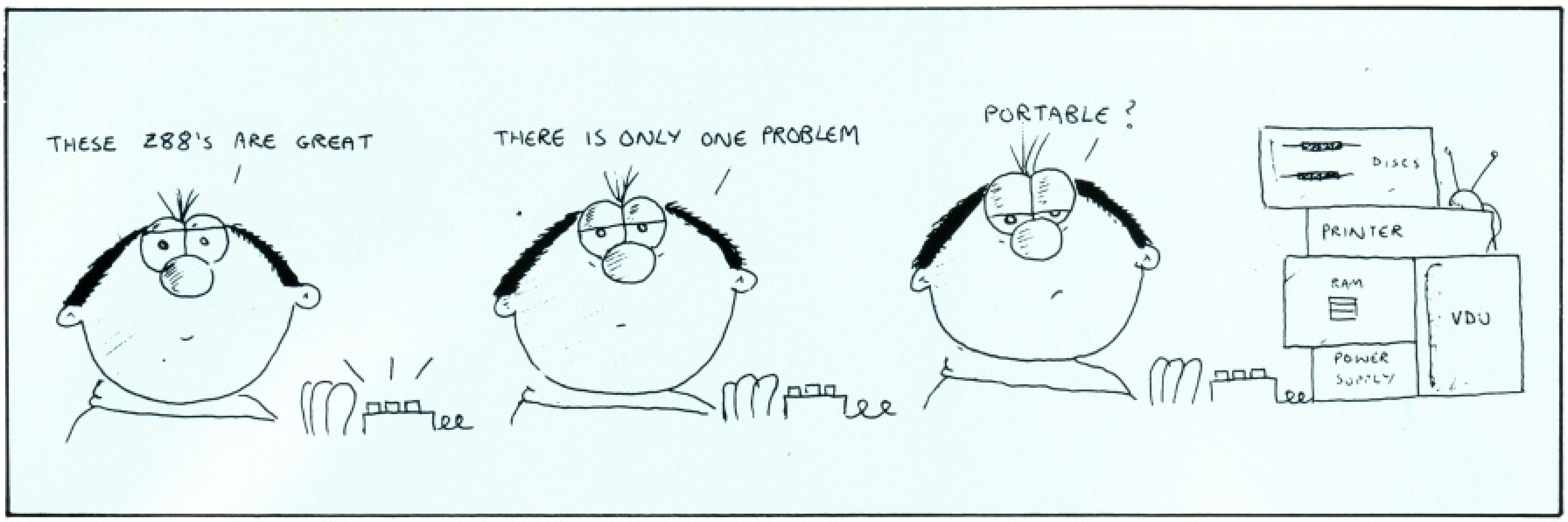
Signature ____________________

☐ Cheque made payable to Amstrad Computer User

Name ____________________

Address ____________________

____________________ Postcode ____________________ ACU1



ADVERTISERS' INDEX

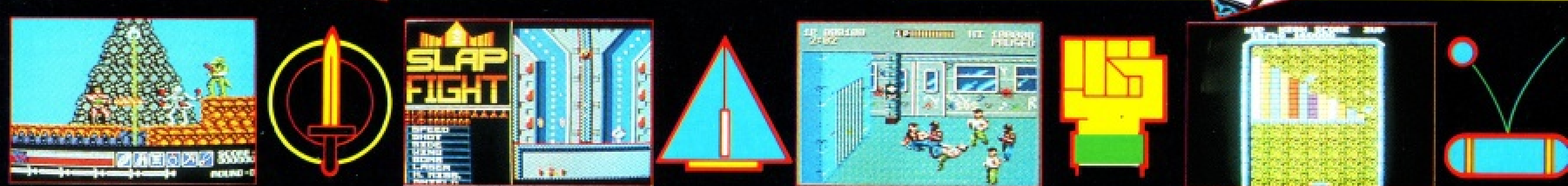


THE ARCADE COMPILATION OF THE YEAR

TAITO®

COIN-OP Hits





© TAITO CORP. 1987

RASTAN The Warrior King. Lands that produce men of legend, dragon slayers, lie in his shadow – guardians of evil fear his fire spewing sword, the axe he wields as swift as lightning. State of the art programming makes a true simulation of the Arcade for your home micro, enjoy superb graphics and realistic action as RASTAN takes on a world of dangers – magical wizards, fire breathing lions, bats, snakes, skeletons and finally the living dead. Is it more than you can handle?

© TAITO CORP. 1987

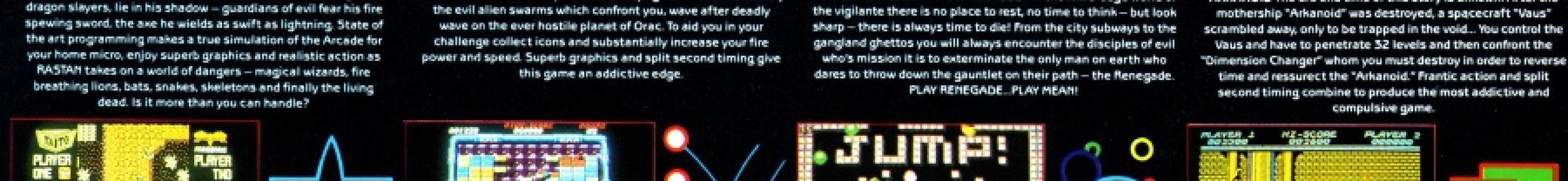
SLAP FIGHT You are the pilot of the Slapfighter and must destroy the evil alien swarms which confront you, wave after deadly wave on the ever hostile planet of Orac. To aid you in your challenge collect icons and substantially increase your fire power and speed. Superb graphics and split second timing give this game an addictive edge.

© TAITO CORP. 1988

RENEGADE REBEL WITHOUT A CAUSE? In the knife-edge world of the vigilante there is no place to rest, no time to think – but look sharp – there is always time to die! From the city subways to the gangland ghettos you will always encounter the disciples of evil who's mission it is to exterminate the only man on earth who dares to throw down the gauntlet on their path – the Renegade. PLAY RENEGADE...PLAY MEAN!

© TAITO CORP. 1987

ARKANOID The era and time of this story is unkown. After the mothership "Arkanoid" was destroyed, a spacecraft "Vaus" scrambled away, only to be trapped in the void... You control the Vaus and have to penetrate 32 levels and then confront the "Dimension Changer" whom you must destroy in order to reverse time and ressurect the "Arkanoid." Frantic action and split second timing combine to produce the most addictive and compulsive game.



© TAITO CORP. 1987

FLYING SHARK HOT FROM THE ARCADES. Flying Shark is the definitive conversion of this shoot-em-up, chart-topping classic hit from Taito. Develop your strategy as you face swarms of enemy planes, tanks, gun emplacements and a host of sea-borne craft as you bomb, blast and battle your way into arcade history.

© TAITO CORP. 1986.

ARKANOID REVENGE OF DOH. Eons have passed...yet despite apparent annihilation in the original ARKANOID game, Dimension-controlling force "DOH" has come back to life, and occupying the huge space-craft ZARG, has entered our Universe. ARKANOID type space-fighter MIXTEC runs through long forgotten computer data until it finds the answer to his threat..."VAUS 2" is launched and speeds towards the threatening alien presence, before it can extract its revenge..."The Revenge of Doh"

© TAITO CORP.

BUBBLE BOBBLE TAITO'S NO 1 ARCADE HIT IS HERE! Meet Bub and Bob, two of the busiest beasties you ever saw, as they battle their way across 100 levels of controlled chaos in search of their girlfriends (ahhh!). Jump around picking up goodies and secret weapons as you seek to outsmart your enemies, but beware...hang around too long and you'll face Baron von Blubba, from whom there's no escape!

© TAITO CORP.

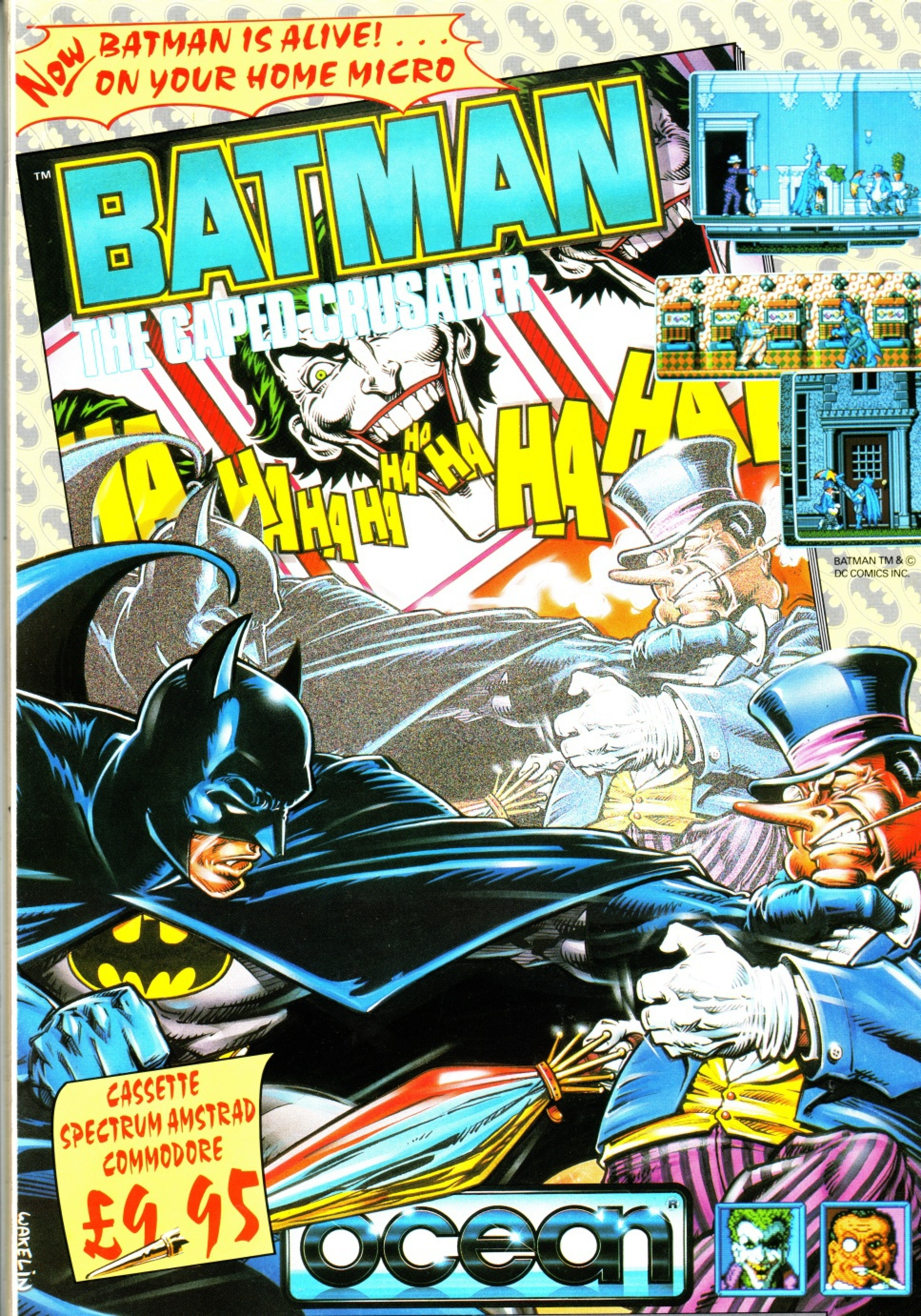
LEGEND OF KAGE Legend has it that long ago in Japan the beautiful Princess Kiri was kidnapped by the evil Dragon King, and Kage, a young ninja who was walking with her in the forest at the time, was given the formidable task of rescuing her. You must help Kage in his quest through the forest to the Dragon King's palace, gain entrance, find Kiri and take her to safety, while avoiding the Dragon King's ninja guards.

AVAILABLE ON
SPECTRUM
AMSTRAD
COMMODORE

Imagine
...the name of the game

CASSETTE
£12·95
ALSO AVAILABLE ON DISK

Imagine Software · 6 Central Street · Manchester M2 5NS · Tel: 061 834 3939 · Telex: 669977



Now BATMAN IS ALIVE! . . . ON YOUR HOME MICRO
BATMAN
THE CAPED CRUSADER
HA HA HA HA HA HA HA HA
BATMAN TM & © DC COMICS INC.
CASSETTE SPECTRUM AMSTRAD COMMODORE
£9.95
ocean
WAKELIN